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PROGNOSIS OF STERILITY*

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The treatment and more especially the operative treatment of sterility differs essentially from the treatment of ill health in that in the latter treatment is a matter of necessity, while in sterility it is frequently a matter of the patients' choice, of their readiness to submit to operation, or to perhaps tedious minor treatment, merely for the sake of future gain and happiness. For this reason an exact statement of the prognosis, of the degree to which success can be expected the individual case, is of perhaps greater importance than in any other branch of surgery.

The importance of this point and the fact that the subject of sterility is so complex that a full review of even one phase of it can be with difficulty compressed within so short a space, is the reason that this paper must neglect treatment and even the details of diagnosis in order to cover prognosis even roughly.[1]

At first sight the most obvious method of dealing with this subject would be by the statistical study of cases treated, but apart from the complexity of the subject and the enormous number of cases which would be necessary for an adequate study of the several classes of sterility, a statistical presentation is rendered useless by the practical fact that so soon as one's study of sterility begins to bring him any considerable number of reference cases he sees an increasingly large proportion of cases which are on their face hopeless, the patients having traveled from place to place hoping against hope. The exclusion of these cases from his statistics would make them unconvincing and unreliable; their inclusion would make the results practically useless;[2] and further the only point which is of practical value is the attainment of an accurate prognosis in individual cases under the several classes of sterility, rather than a general statistical statement which would be of little value, and which, from the complexity of the subject, is all that could be obtained statistically from any number of actually observed cases which could today be collected.

In order to obtain a fair conception of the prognosis in any given case we must consider sterilities under a classification by causation, and must discuss, first, the prognosis in each of these classes by itself, and, later, the prognosis in the many cases in which the sterility is due to more than one of these causes.

We may begin such a classification by dividing sterilities into those which are dependent on absence or inferior quality of the ovum, those which are the result of secretions of the genital tract which are destructive to either the ovum or spermatozoa, and finally those which are due to absence or inferior quality of the spermatozoa. In each of these classes we have cases which are organic in nature, that is, due to local or anatomic abnormalities; and in each we see cases which are functional and due to abnormal constitutional conditions of the individual. We have, then, at least six classes to start from, and most of these must later be subdivided.

We are profoundly ignorant of the chemistry of the reproductive organs. We can then draw con[illegible]sions about the functional cases only from anal[illegible] with facts which have been more or less well es[illegible]lished in the breeding of animals and by the very small amount of direct experimental work which has been done along lines bearing on sterility. After about three years of some personal study on this point in domestic fowls, and of inquiry among breeding farms devoted to animals it seems to be probably an established fact that, in animals, fertility is decreased both by undue obesity in either sex and by excessive overwork. There is also some reason to believe that conditions of life which produce marked nervous ex[illegible]bility decrease fertility in animals, and this must [illegible] remembered in connection with many of the condit[illegible] of civilized existence in the human race. We h[illegible], however, no knowledge of the mechanism by w[illegible] such alterations of condition produce relative or c[illegible]plete sterility in animals. We do not even k[illegible] whether it is effected by decreased quality of the [illegible] or spermatozoa of the individuals, or by alteration of the chemical composition of the fluids in which these gonads are immersed.

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[1] The Causes and Treatment of Sterility in Women, Am. Jour. Med. Sc., August, 1907; Anteflexion of the Cervix and Spasm of the Uterine Ligaments in Relation to Retroversion, Dysmenorrhea and Sterility, Surg., Gynec. and Obst., July, 1911, p. 17; The Ultimate Results of the Conservative Surgery of the Ovaries, Surg., Gynec. and Obst., March, 1912, p. 255. Reynolds, Edward: The Theory and Practice of the Treatment of Sterility in Women, THE JOURNAL A. M. A., Jan. 11, 1913, p. 93; Further Points on the Sterility of Women, ibid., Oct. 11, 1913, p. 1363.

[2] As an illustration: After selecting, in preparation for this paper, a certain date from which a statistical investigation of personal cases should begin, and assembling all the cases seen since that date, the first seven cases showed the following conditions: Patient 1, both tubes and one ovary previously removed for tuberculosis. Patient 2, large pelvic masses after repeated operations for peritonitis"; condition of husband unknown. Patient 3, both tubes enlarged; two previous abdominal operations; will contemplate nothing but minor treatment. Patient 4, ten years of gonorrheal salpingitis in first marriage; two previous operations; demanded operation in spite of bad prognosis; both tubes found ruined. Patient 5, aged 44; previous operation for genital tuberculosis; polypus of cervix; husband not accessible. Patient 6, husband partly impotent and refuses examination. Patient 7, anteflexion of the cervix, pinhole os, plastic operation; pregnant three months afterward. Here [illegible] six hopeless cases were found before one was favorable. In nea[illegible] hundred cases which were abstracted before the attempt was give[illegible] the proportion of hopeless cases proved indeed to be smaller than [illegible] but was still so high as to vitiate statistical conclusions. The [illegible]centage of hopeless cases was, moreover, found to increase in a ge[illegible] relation to the distance from which the patient had been referred, hinting in another way that a prognosis drawn statistically from such a list as this would not show fairly the prognosis of sterility in cases as the practitioner sees them, or as they exist in the community at large.

We know even less about this question in the human race. We however know a little more about this point in the human male than in the female on account of the ease with which the spermatozoa can be directly inspected and because of the impossibility of finding the ovum. We have direct evidence that in the human male an excess of mental work sometimes results in the disappearance of spermatozoa from his semen, and some direct evidence that an excess of fat may produce the same result. We have also probable clinical evidence that the excessive use of alcohol and perhaps the extremely excessive use of tobacco decrease the vitality of his spermatozoa even though they be still present and of normal appearance. We have absolutely no evidence concerning the effect of these general conditions on the ovum, and can only surmise that they may well have the same effect on the gonads of the female that they have on those of the male. This weakness of our knowledge of the functional conditions is necessarily a constant embarrassment in our interpretation of the importance of the organic or anatomic abnormalities which we detect in a given case.

In spite of this extremely unsatisfactory state of our scientific knowledge it is, however, possible to obtain very satisfactory practical results in the prognosis of individual cases by the assumption of the following working hypotheses:

1. When the spermatozoa are abundant in number, normal in form and appearance, furnished with long cilia and capable of rapid movement through the semen the male is satisfactorily fertile.

2. When normal spermatozoa are killed or lose vitality overrapidly in the secretions of the individual woman, the chemicophysiologic character of her secretions furnishes an effective cause of sterility.

3. The alterations in a secretion which make it fatal to the spermatozoon may be localized in the vagina, the cervix, in the body of the uterus, or in one or h tubes; and any one of these alterations may exist with normal secretions above it; but an alteration in the secreting surface in any of these localities usually vitiates all the secretions below it, probably by their necessary admixture.

4. When the spermatozoa are observed to penetrate without apparent loss of vitality to the fundus of the uterus and to survive there for a normal length of time, deficient quality of the ova may be considered the probable cause of the sterility.

Throughout the management of every case of ster- it must be remembered that the failure is the ure not of one individual, but of a couple, and that condition of both partners must be studied.

If these hypotheses are borne steadily in mind oughout the study of a case, and if the variations in conditions which affect them are studied and udied by all the methods which are now at our dis- al, it becomes surprising to see how practically good rognosis can usually be made in spite of our lack exact physiology and chemistry, but, on the other nd, it is certainly true that so long as we labor under these defects of theoretic knowledge, a painstaking exactness in the observation of details will be the first prerequisite to success.

In the practical management of such a case the first step is the taking of a careful history, which should not be confined to the history of the sterility alone, but should follow every detail of the past health of both patients, since many sterilities are dependent on slight pathologic alterations in the genitals on which great light is often thrown by past symptomatology. The history and physical examination should also include a careful study of the general condition and especially of the nutrition and habits of life of both partners, such factors as obesity, emaciation, nervous debility, drug habits, sleeplessness from overwork, etc., in either partner, being all important. Furthermore, distasteful as the subject is, he who is to handle sterility successfully must acquire the art of obtaining full and accurately truthful histories of the sexual habits of the couple, with especial reference to any abnormalities, even if apparently minor, in either the sexual appetite, or the methods employed in the performance of coitus. There is certainly a steady percentage of cases in which these matters are all important. The next step in the management of the case from a practical standpoint is usually a careful examination of the genital tract of the woman step by step, remembering that minor abnormalities which are unimportant to health, that is, which create no symptoms of importance, are often abundantly competent to produce infertility. I constantly see cases which have been pronounced normal even by excellent gynecologists and in which the organs are normal from the standpoint of health, but in which there is nevertheless some minor abnormality which is perfectly evidently the cause of the sterility, as is often shown by the fact that when this is remedied impregnation occurs without further treatment. This examination must include study of the condition of the vagina, cervix, uterus (including the character of their secretions), tubes and ovaries, and it must be remembered that the detection of the minor abnormalities of the tubes and ovaries almost always requires an examination under anesthesia.

When all this has been gone through with sufficient care the surgeon should be in a position to estimate with considerable closeness both the anatomic and functional condition of the woman and should have an equally good estimate of the general functional condition of her husband.

In the majority of cases the next step should be a form of examination which has been lately given to the profession by the ingenuity of Dr. Max Huhner of New York, the microscopic examination of the spermatozoa in situ in the genitals of the woman, of which much will be said in the remainder of this paper, but dramatic and interesting as this test is, it must always be remembered that it can furnish at most only one element in our study of a case.

This test not only furnishes an examination of the man which is in most cases thoroughly satisfactory, but also enables us to check the conclusions previously arrived at as to the relative importance of anatom and functional conditions by direct observation much of the process of fertilization while actually progress. Experience has, however, convinced me th this process of observation must, like so many oth exact methods, be considered by the wise clinician furnishing only one link in the chain of evidence. is so interesting and dramatic that it is extremely ea to overestimate its value, and to be led by it to fa conclusions, if we fail to consider its results in connection with those obtained by other methods of observation. If the conclusions arrived at by both methods are substantially in agreement, even to details, we may safely trust them. If the two methods yield different results we should distrust our conclusions, for we are then certainly not in a position to act until further study has reconciled their discrepancies. To pin our faith to either method will usually lead to false conclusions.

For the performance of the Huhner test we must ask to see the woman as soon as possible after coitus has taken place. She may come to the office for this examination, since it is only very exceptionally, if ever, that the vagina does not contain sufficient spermatozoa for this test even after she has walked about for some time. With a normal vaginal secretion the spermatozoa should show active motility in the vagina for about an hour and sometimes much longer, but if circumstances permit it is desirable that the patient should be seen within half an hour of coitus. A specimen of the vaginal mucus is taken by a sterile platinum wire from the culdesac, exposed by a speculum, and this examination may be repeated if desired, whenever convenience permits, until the spermatozoa are found to have lost their activity. A specimen of the cervical mucus is next obtained in the same way, after the surface of the cervix has first been carefully wiped clean of semen by the repeated use of cotton swabs (no antiseptic should be used). With a normal cervical secretion and a normal os a few spermatozoa will usually be found in the lower part of the cervical cavity almost immediately after coitus, but will appear there in larger numbers at the end of half an hour to an hour. They are never so numerous here as in the vagina, but under normal circumstances, at the end of an hour, there should be several actively moving spermatozoa in each slide from the cervical mucus. The greatest care should be used to avoid the infliction of any trauma in the examination of the cervical cavity, since overthoroughness here may readily vitiate the use of the remaining portion of the test at that sitting.

When the cervical cavity has not been unduly disturbed, when the spermatozoa are of full vitality, and when the secretions of the woman are normal throughout, an examination of the secretions of the cavity of the uterine body should disclose the presence of a few actively motile spermatozoa in the uterine mucus at the end of from two to three or four hours. This examination must however be made with a specially devised syringe, since the platinum loop can neither be introduced with certainty to the fundus nor made to retain the uterine mucus during its withdrawal from the cervix. Even with the use of a syringe it is difficult to be absolutely sure that spermatozoa which are observed in the fluid withdrawn from the uterus are not due to an admixture from the cervix, but if the piston is not withdrawn until the tip of the syringe is well up in the uterine cavity, if the outside of the ringe is carefully wiped after withdrawal, if it is perly designed, and especially if the spermatozoa found several times in succession, their probable ation in the uterine mucus can be predicated. In ne cases it will be found that actively motile spermaoa have disappeared from the cervix after the lapse a number of hours but are still found in the uterine cus. In these cases the test is practically complete. This study of the process of fertilization while it is actually in progress seems most rational and is in many cases extremely satisfactory, though care must always be used in its interpretation, as will be developed further later. The results obtained from it have led me to be a believer in the probable existence of that much mooted phenomenon, relative fertility; that is, I can now believe that a woman with slightly altered secretions may be sterile to a man with only moderately vitalized spermatozoa, and yet fertile to a man whose abundant and highly vital spermatozoa can resist her slightly hostile secretions; while, on the other hand, the moderately vital spermatozoa of the first man might succeed in effecting conjugation with the ovum through the absolutely normal secretions of another woman. On this latter point I have had fairly direct evidence, that is, I have seen instances in which with improvement in the secretions of the woman comparatively poor spermatozoa became able to make effective progress.

The Huhner test, valuable as it is, must however not be relied on too far lest it lead us into a too mechanical view of the problem of sterility. It requires for its successful use considerable tactile skill and no inconsiderable familiarity with the microscopic appearances to be noted, and there is undoubtedly much yet to be learned, from the microscopic point of view, by wider experience in the use of this test. It is not adapted for experimental, empiric use by the general practitioner, nor is it safe unless carried out with the most complete asepsis.

The several observations which may be made by this method will now be summarized, and their bearing on the results of other methods of examination will then be discussed.

If the vaginal pool when submitted to the microscope contains no spermatozoa, alive or dead, the probability is strong that the man is aspermatic and this should then be confirmed by direct examination of the semen as obtained by expression or from a condom specimen. Such aspermia may be merely temporary and is frequently neither permanent nor hopeless; but into the prognosis and treatment of aspermia and azoospermia I do not here propose to enter. If the vaginal pool contains an abundance of spermatozoa which are either dead, or at best feebly motile, at the time of a reasonably prompt examination, the character of the vaginal secretion is probably responsible for their death, and should in most cases be altered by treatment; but the importance of the vaginal condition is much affected by the size and position of the os uteri. There are not a few cases of widely opened os, with normal cervical secretions, in which a reasonable number of living spermatozoa succeed in entering the cervix in spite of a hostile vaginal secretion, that is, before it takes effect on them. If they succeed in entering the cervix in sufficient numbers and with sufficient vitality to be found later in the uterine mucus the condition of the vaginal secretion is of course of but little importance. If, however, as is frequently the case, spermatozoa are found, in an apparently normal cervical secretion, either dead or in a condition of limited vitality while the majority of their brethren have been killed by a hostile vaginal secretion, it becomes probable that even the most successful ones were largely devitalized by the latter, and its treatment is of the utmost importance.

Much the same thing may be said of the hostile conditions of the cervical secretion; but it may be remarked, in passing, that it is extremely interesting to see how often actively motile spermatozoa may be seen to progress across the field of the microscope in a cervical secretion of grossly normal appearance, until they come in contact with some clump of pus cells which is evidently tied together by sticky secretion, with which the tail of the spermatozoon becomes entangled. The result then is that he indulges in futile struggles to escape, by the violence of which he may be seen to become exhausted, and in a few minutes gives up the struggle and lies still. This is of course due to the admixture with normal serum of thick inspissated mucus from inflamed cervical glands. In these cases the cervical mucous membrane must of course be rendered normal before impregnation is likely to occur. It may here be again remarked that this is unlikely to be effected to the degree of normality which permits of impregnation, without an intelligent alteration of the size and shape of the os and cervical cavity by a plastic operation, in addition to a curettage and thorough if not repeated disinfections of the mucous membrane.

These conditions as actually seen under the microscope, then, amply demonstrate the reason for the almost invariable failure, in sterility cases, of the mere dilatation and curettage in which the general practitioner so often indulges, not infrequently, too, with results which permanently decrease his patient's chance of fertility under any treatment. At least such has been the result of my observations in this class of cases.

If the uterine mucus contains spermatozoa which have penetrated there and then died prematurely (they should live many hours if not days in this situation), it becomes probable that they have been killed by exposure to the tubal secretions so soon as they have reached the point where those secretions are but little if at all diluted by the secretion of the uterus, and those of the lower portions of the tract through which the spermatozoa have lived. If the uterine cavity contains fairly numerous spermatozoa of high and persistent vitality in a woman who nevertheless remains persistently sterile, the demonstration that her sterility is ovarian is sufficiently satisfactory to be practically useful.

By this means of direct observation of the progress of the spermatozoa through the genital canal, of their comparative vitality at the start and in each stage of their progress, an experienced observer may obtain information of the utmost value. In his interpretation of these facts, however, he must be guided not merely by these results, but by their correspondence with the observed local conditions both gross and microscopic, and by these as checked by his remembrance of all the light gained from the history, and from his study of the general condition of both partners. Otherwise I believe that he will take an unduly narrow view and will be in the long run none too successful in his management of these cases.

Success in diagnosis and prognosis from such complicated observations as these must always be a matter of the personal equation, but with sufficient care and thorough study they become increasingly accurate and often surprisingly so.

The prognosis in individual cases may now be discussed in accordance with the classifications by causations originally proposed.

If the male is azoospermatic the prognosis is that of azoospermatism, which varies with its cause.

If his spermatozoa are either few, abundant but somewhat lacking in motility, or in any other way imperfect, the prognosis which would be derived from the condition of the woman is impaired by just the amount of the feebleness of the male, and though it is usually not hopeless, both elements must be remembered in forming it.

If the spermatozoa are not only abundant but also long tailed, well formed, and active, the prognosis can be made from the condition of the wife alone.

When, in such cases, the only abnormality found is in the character of the vaginal secretion, or in such alteration in combination with a pinhole-sized and badly placed os, the prognosis of fertility under appropriate treatment is that of almost certain success. When, with first class spermatozoa, the abnormality is found in the cervix with an apparently normal uterine body, tubes and ovaries, the prognosis after appropriate treatment is always very good. When, with first-rate spermatozoa, the abnormality is apparently to be found in the uterine body, that is, when the uterine secretion as obtained by the syringe is sticky, or unduly filled with clumps of leukocytes; when the ordinary symptoms of endometritis are present; when the bimanual examination shows the uterus large and soft; but, on the other hand, when a careful bimanual examination under anesthesia satisfies the attendant that there is every probability that the ovaries and tubes are normal, the prognosis under treatment is good. When the abnormality is believed to be slight but existent in both tubes, that is, when both tubes are palpable though not greatly enlarged, the prognosis, though not necessarily hopeless, is not good. When both tubes are grossly diseased the prognosis is, in my opinion, so poor that operation is not justified for sterility alone unless both partners insist on it after full statement of the poor prognosis. When coincidence of all the above methods of examination leads the observer to believe that though one tube is undoubtedly or probably abnormal there is reason to believe that the other tube is normal, the prognosis is again good, after the removal of the affected tube. I have had several most satisfactory successes in such cases, though we must, of course, be always prepared in these cases to find that the second tube is occluded in spite of our belief to the contrary. When the whole genital canal is normal or substantially normal as shown by the result of an inspection and examination under anesthesia, with the support of the presence of active spermatozoa at the fundus, that is, when the fertility is demonstrably merely ovarian, when arrest of development is not present, but the ovaries are either normal or slightly enlarged, the prognosis after conservative operation on the ovaries is thoroughly good. In my opinion such an operation is justifiable under the conditions of today for sterility alone, provided that all the pros and cons have been placed before both parties and that both of them request operation after due consideration of them.

In the far more common cases in which there is an admixture of several of these abnormalities the prognosis must be determined for the individual case by carefully weighing the principles set forth above as applied to the individual combination of circumstances.

The results obtained in the treatment of sterility have long been, and too often are still, proverbially poor. I believe that the reason is to be found in the fact that so many physicians treat these cases from a purely empiric point of view and without any attempt at educating themselves in the special subject of sterility.

In the first place, the importance of an examination of both partners is too frequently overlooked; in the second place the search is too often directed to the discovery of lesions which should create ill health rather than toward the often minor conditions which determine sterility. To judge from my own experience, sterility is about as frequently the fault of the male as of the female, but popular opinion usually places the responsibility for the sterility on the woman, and this popular superstition is too often shared by the profession. I regret to say that my daily experience teaches me that many gynecologists do not hesitate to treat women and even subject them to operations, for sterility alone, with no knowledge whatsoever of the condition of their husbands. I feel bound to confess that in earlier days I have done it myself.

On the other hand, while urologists constantly rail at this weakness of the gynecologic portion of the profession, study of their writings inevitably leads one to the conclusion that too many of them have not plucked the beam from their own eyes. I have seen too many cases in which expert urologists have based their opinion on the sterility of a couple on an examination of the man alone to doubt that this branch of the profession is also often at fault. If the examination of a man shows him to be aspermatic no examination of the wife is necessary until his case has been concluded, but if, as so often happens, spermatozoa are present but are of doubtful excellence, the prognosis of the case must depend on the results of the examination of both partners. In this class of cases the examination of the spermatozoa as taken from the female genitals is of especial value, since it makes it possible to check at one sitting both the urologic and the gynecologic examinations, and to estimate their relative importance.

Nothing is more common than to have a woman referred from a distance unaccompanied by her husband, who is, however, stated by their attendant to be "all right": and then to find that the statement that the husband is normal means merely that he is in general good health and potent, and does not mean that his spermatozoa have been seen. The treatment and more especially the operative treatment of a woman for sterility alone without actual inspection of her husband's spermatozoa is entirely unjustified. It is certainly practically expedient, and probably justifiable, to treat for sterility, even in an operative way, women who have been referred from a distance unaccompanied by their husbands, who present sufficient causes for sterility in their own person, and who bring an authoritative statement that the husband's spermatozoa have been examined and found normal, but the advantages to be gained by the inspection of the spermatozoa in their progress through the woman's genital tract, though not in my opinion essential, are nevertheless so considerable that sterility patients should, whenever possible, come to the specialist accompanied by their husbands.[3]

The case against the profession goes further than this common failure to study the couple as a pair, however. It may almost be said that the usual course of the gynecologist confronted by a case of sterility is to treat it from the standpoint of health and not from that of the relief of sterility, that is, to institute treatment or perform operations, directed to the removal of anatomic or other alterations which he perceives in a woman's genitals, without stopping to consider whether these observed peculiarities have anything to do with her individual sterility or not. It may almost be said that when the average gynecologist fails to detect any cause for sterility he dilates and curets the woman for the sake of doing something. There are of course many men whose conduct of such cases is conscientious and able, but the above description is, I believe, not too strong a statement of average facts, and has in my experience, in part at least, been applicable to the practice of some men who in other departments of gynecology are of recognized preeminence. Such empiric treatment is worse than useless. It too often renders futile, future rational efforts for the relief of the conditions which are actually important in the given case.

I believe it is mainly by reason of these two faults on the part of the profession that the treatment of sterility is so frequently unsuccessful. I believe that when sterilities are, as a habit, managed by the examination of both partners as soon as sterility has become probable and before the woman has been subjected to useless and usually harmful minor treatment and operations, its prognosis will become what it ought to be and what it today is in well-managed cases, usually satisfactory.

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ABSTRACT OF DISCUSSION

DR. JOHN O. POLAK, Brooklyn: I wish to emphasize one point in connection with what Dr. Reynolds has said in regard to the fertility of the man. This point should be taken into consideration in every case; i. e., the male's past performances. I always have the man examined not only as to his potency, but as to the presence of evidences of previous infection, because that link—the history of previous infection—has a great influence on his potency.

DR. JOSEPH B. DELEE, Chicago: My associate, Dr. Lespinasse, has been working on cases which I have referred to him, to see if we could not reach a solution of the difficulty presented by those cases in which the husband is well and the wife is well and yet sterility exists. He has worked in the light of the knowledge given us by recent studies in serology. We all know of certain instances in which the husband, after a divorce from the sterile wife, has secured children from another woman, and the wife, on remarriage, has also been fertile by another man. I, personally, have such a case under my present care, having delivered the woman twice after a second marriage, and a physician in Los Angeles having delivered the second wife of this woman's former husband.

Why did not the spermatozoa of the first husband succeed in fertilizing the ovum of the first wife? Lespinasse has found the secretions in different women dissolved the spermatozoa of different men—a sort of immunity reaction. Experiments are being made, but I am not yet able to give the results, since we want to accumulate a sufficiently large number.

When Dr. Reynolds mentioned the change in the local secretions, this is but a step further in the study of the gross symptomatology and pathology of the genital tract. We have got far enough in the study of these immunity reactions that it seems possible we may find the cause of sterility where the husband presents no evidence of disease, has strong, living spermatozoa, and where the wife has no pelvic inflammation or no real surgical pathology of the parts.

The treatment of sterility has been, in a manner, extremely routine, and therefore, unsatisfactory, and women are bandied about from one specialist to another until they lose faith in medical art.

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[3] A satisfactory examination of a couple for sterility cannot always be concluded in a single office visit. It may not infrequently require a number of visits, sometimes at intervals of several days.

Another point that will explain some of the causes of sterility is the abnormality of the internal secretions. I hesitate to make that statement because it throws us into an immense field that is very dimly lighted by positive knowledge, but I do know cases that have been unsuccessfully treated elsewhere and have been successfully treated by the glands of internal secretion—thyroid and other extracts. In some instances administration of these preparations has been followed by impregnation, especially that type of firm fat obesity, in which the women are round and plump and the fat is hard, almost like firm flesh, and the periods are inclined to be irregular and small in amount. Those cases have responded to combined treatment occasionally.

The use of alkaline douches just before intercourse deserves mention. The husband, as a cause of the sterility, must be always emphasized, and I have found that excessive smoking of tobacco is occasionally a cause of sterility, and that alcohol, even when the spermatozoa are alive and motile, indirectly prevents them from successfully fertilizing an ovum; that workers in arsenic, antimony, and other chemicals, in spite of live spermatozoa are sometimes sterile. Then I have had men who have had syphilis and are sterile, even though the examination of the semen showed motile spermatozoa. The sperm injected into the woman has both a local and a general effect. It has been demonstrated that the spermatozoa not used for fertilization enter the cells of the genital tract and are absorbed into the cell. This is a line of light on the immunal theory. Isn't it possible that a woman can be immunized; her serum so protected against the advent of the spermatozoa that it dissolves them when they come? Perhaps this explains—when the husband or wife has been sent away for six or eight months—successful fertilization. The law of incompatibles thus bids fair to be explained.

Dr. H. O. Pantzer, Indianapolis: His, the anatomist, said that the complexity of the genitalia in the human female is such as to make it, to him, a surprise that woman ever conceives. Regarding the nervous excitability referred to, I have this observation to mention, that women who have delayed menstruation frequently give evidence of a presenile sclerosis of the ovum. These cases are often associated with chronic intestinal auto-intoxication. This interrelation of toxemia and ovarian sclerosis is not surprising when we recall that toxemia strikes essentially at all glandular organs, and in all is followed by withering and sclerotic changes. It is surprising how many cases of spanomenorrhea or amenorrhea are helped by looking after systemic elimination. All will remember the reliance the older practitioners and gynecologists placed on elimination, as evidenced by the free laxative remedies invariably contained in their prescriptions.

Dr. Edward Reynolds, Boston: Some of the points about which Dr. DeLee spoke were omitted in my reading, but were in the paper.

I do not think the bicarbonate of soda routine for the acid vagina is a good thing. The acid nature of the vaginal secretions is, in all probability, merely the most superficial indication of the chemical changes which destroy the spermatozoa. The failure of such treatment in the vast majority of cases is because we only neutralize the acidity and not the other chemical alterations. I am unable to speak as yet of various studies which I have made, and have had made, and am making on the chemical and microscopic character of the secretions. So far as I know, the chemical and microscopic examination of the mixed secretion of the male and the female, as obtained from the female genitals, is, as yet, an entirely virgin field. There have been a number of men who have observed the spermatozoa and their action in those fluids, but the essential point which we cannot yet speak of is the microscopic and chemical examination of the mixed secretions; the establishing of a normal standard and the detection of abnormality. I have learned to recognize certain arrangements of pus cells, and have seen the spermatozoa swimming freely, come into one of those pus cells, tangle his poor little tail in it, stop his progress, thrash, thrash, thrash, and lie dead. You have to reduce that apparently normal cervical secretion. There are dozens of such things that we know nothing of. The question of immunity is a very curious and interesting one but from a practical standpoint on both the question of abnormal chemistry and immunity we must be careful how we determine our action in such cases by subjects that are so little worked out that our knowledge is hardly a gleam in the obscurity of our ignorance.

RELATIVE FREQUENCY OF ECTOPIC GESTATION *

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Why an impregnated ovum should implant and develop outside the uterus so relatively frequently in the human species and fail to do so in lower animals is a question the answer to which has been sought through investigation by clinicians and laboratory workers for a great many years. Clinicians agree that ectopic gestation is a frequent abnormality of early pregnancy but vary in their estimates of frequency depending on whether their clinical experience has been gained as a necropsy surgeon, a gynecologist, an obstetrician or a general practitioner. The large number of case reports indicate the frequency with which this condition is met by surgeons, but is too irrelevant to be of aid in discussing the subject statistically. In this paper, a statistical study of a definite number of patients will be made in order to estimate the relative frequency of ectopic gestation to disease in general, to women's disease, to pregnancy and to abortion. The small material presented makes the importance of the subject the sole excuse for presuming to answer these difficult questions.

The necropsy surgeon reports that he frequently meets ectopic gestation because sudden death associated with such a condition requires his services to satisfy the demands of the law. The gynecologist considers ectopic pregnancy a frequent condition because he does not take into account the many ordinary conditions which the man in general practice has treated before referring to him the patient with ectopic pregnancy. The obstetrician considers ectopic gestation a relatively rare condition because, through lack of understanding, the laity are prone to come to him only after the first three dangerous months of pregnancy are passed. It is an odd experience that a general practitioner may encounter several ectopic pregnancies quite close together and then practice for some time without meeting a case.

Formad,[1] who was a coroner's physician in Philadelphia, in 3,500 routine necropsies, found thirty-five deaths from ectopic pregnancy. Michel[2] has reported twenty-six cases of ectopic gestation in 6,000 gynecologic conditions, while Hartz[3] reports 3.4 per cent. of ectopic pregnancy in 1,700 specimens examined in the gynecologic laboratory at Jefferson and St. Joseph's hospitals in Philadelphia. Hennig[4] stated some years

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] From an unpublished communication by Ellice McDonald.

[2] Michel: Fortschr. d. Med., 1914, No. 23, p. 637.

[3] Hartz: Am. Jour. Obst., 1915, lxxi, 601.

[4] Hennig: Die Krankheiter der Erleiter und die Tubenschwangerschaft, Stuttgart, 1876.

ago that the directors of even large obstetric institutions might never encounter a case.

Although ectopic gestation is discussed in textbooks on obstetrics, no modern obstetrician has, to my knowledge, ventured an opinion of its frequency based on his personal experience. My own experience has been that for ten years, while limiting my practice to obstetrics, I did not treat a case of ectopic pregnancy in private or clinic work, but during the last three years while combining gynecology with obstetrics, I have operated on thirteen clinic patients and on seven private patients for this condition. The clinic cases form the basis for this paper as they were encountered at fairly regular intervals in a comparatively large number of patients.

From July 1, 1912, to May 1, 1915 (the time of writing), 36,668 patients have registered in the outpatient clinics of the Leland Stanford University, School of Medicine. Of this number, 2,955 have been treated in the women's clinic. In the clinic, fairly extensive histories of the patients were taken and a careful pelvic examination made, as well as considerable routine laboratory work started. A presumptive clinical diagnosis was entered on the history as soon as conditions justified such procedure. These facts are mentioned because often the diagnosis of early pregnancy is impossible, and because some patients, so soon as that diagnosis is made, fail to report to the clinic. Many cases of pregnancy abort or are aborted after leaving the clinic, and possibly some cases of ectopic gestation are overlooked. Taking these facts into consideration, it is interesting to note that of the 2,955 patients registered in the women's clinic, 554 were operated on for various gynecologic conditions. Of these, 353 were curetted and the curettings, together with the associated pathology, were studied in the laboratory for obstetrics and gynecology.

From these specimens there have been made seventy-three laboratory diagnoses of incomplete abortion and thriteen diagnoses of ectopic pregnancy, 1,225 of the 2,955 patients were confined by the clinic at or near term, which makes a total of 1,311 known pregnancies and 468 patients operated on who were known not to be pregnant.

The remaining group of 1,176 patients who did not enter the hospital includes undoubtedly some cases of pregnancy, but is composed largely of nonpregnant patients such as come to all clinics for treatment of minor gynecologic ailments, as well as patients past the childbearing period, and a few children. The statistical work with this group is not as accurate as with the hospital group and the proportion of pregnant to nonpregnant patients can be estimated only roughly. Still it is important to include with the known pregnancies a fair number of these doubtful cases. For ten years, I have recorded annually the percentage of pregnant patients that have failed to return to the San Francisco maternity clinic for confinement, and have found that, on the average, 25 per cent. of the applicants do so fail to return. Applying this experience to the present clinical material, 393 of the 1,176 doubtful cases, or 30 per cent. of the number of confinements, have been grouped with the known pregnancies, making a total of 1,704 pregnancies, and 783 have been grouped with the operated patients, making a total of 1,251 nonpregnant patients.

From these figures, it will be seen that we have met ectopic gestation thirteen times in 36,668 patients or once in 2,820 cases of illness such as a general practitioner would encounter in a practice covering the diseases of men, women and children. Thirteen cases of ectopic gestation among 2,955 women with pelvic symptoms, or once in 227 cases such as come to the specialist: and thirteen cases of ectopic gestation among 1,704 cases of pregnancy, or once in each 131 pregnancies!

Considering the pathologic diagnoses which have been made in the laboratory, it is seen that 86, or 5.33 per cent. of the pregnant patients were sent into the hospital because of bleeding, and were curetted. A study of these curettements has shown that thirteen of the 86 patients, or nearly 17 per cent. of possible abortions, were flowing because they were suffering with a misplaced pregnancy.

This does not indicate the relative frequency of abortion to pregnancy, which has been estimated by Taussig[5] as high as one abortion to every 2.3 labors, but will, I believe, call attention to the possibility of

CLINICAL SUMMARY OF ETIOLOGIC CONDITIONS IN ECTOPIC GESTATION

Case	Age	Grav.	Para	Abortions, Induced	Abortions, Spontaneous	Gonorrhea	Last Pregnancy, Yrs.	Leukocytosis 10,000+	H. Per Cent. 60 or Lower	Tube Rupt.	Tube Unrupt.	Tube Abor. Comp.	Tube Abor. Incomp.	Clinical Diagnosis ‖	Salpingitis Microscopic	Tube Decidua	Fetus Present	Mortality, Fetus	Mortality, Mother
1	25	iv	ii	0	i	+	5	?	?	..	..	..	+	Pelvic abscess...............	+	—	—	+	—
*2	35	vii	ii	v	0	+	6	+	?	..	..	+	..	Salpingo-oophoritis..........	+	+	+	+	—
3	30	iii	i	0	i	—	7	—	+	+	..	..	..	Ectopic....................	+	—	—	+	—
4	35	iv	ii	i	0	—	5	—	—	..	..	..	+	Ectopic ?...................	—	—	—	+	—
5	28	iii	i	i	0	—	11	+	?	..	..	..	+	Pelvic abscess...............	+	—	—	+	—
6	28	ii	0	i	0	+	12	+	+	+	..	..	..	Appendicitis.................	—	+	+	+	—
7	23	ii	0	0	i	—	2	+	+	+	..	..	..	Salpingitis..................	+	+	—	+	—
8	29	ii	0	0	i	—	7	+	—	..	..	..	+	Pelvic abscess.............	+	+	—	+	—
†9	34	i	0	0	0	—	0	+	—	..	+	..	..	Uterus retroverted..........	+	—	+	+	—
10	40	ix	v	iii	0	—	1	?	+	+	..	..	..	Kidney stone................	+	—	—	+	—
11	21	i	0	0	0	+	0	+	+	+	..	..	..	Ectopic ?...................	—	+	—	+	—
12	24	ii	0	0	0	—	6‡	+	—	..	..	..	+	Incomplete abortion........	—	—	—	+	—
13	20	iii	i	0	i	—	8	?	+	..	+	..	..	Incomplete abortion........	—	+	+	+#	—
Aver.	30	iii	i	..	..	..	6	80%	60%	..	..	..	..	....	60%	46%	30%	100%	0
Total	..	43	14	11	5	4	..	..	..	5	2	1	5						

* At operation there was found a leather-like fetus 3 cm. long compressed between a pus tube and the fibrous uterus. The patient survived a tube abortion, which undoubtedly occurred six years ago, associated with an attempted criminal abortion.

† In the laboratory there was found a hematosalpinx containing cartilage cells which, with the history, gave evidence that the patient survived an ectopic pregnancy four years ago, mistaking the conditions for a spontaneous abortion.

‡ Ectopic pregnancy. Left tube and ovary removed. ‖ On hospital entrance slip. # Fetus alive at time of operation.

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[5] Taussig: Prevention and Treatment of Abortion. St. Louis, 1910.

confusing ectopic gestation with incomplete abortion and should put the general practitioner on his guard when treating such cases.

Albucasis,[6] an Arabian surgeon of the eleventh century, is said to have first described ectopic pregnancy. For generations the etiology of the condition was little understood, but gradually the idea prevailed that, in many cases at least, an inflammatory condition of the adnexa was the predisposing cause.

Dr. William Campbell[7] accumulated these data and published a monograph which later formed the basis of Parry's[8] work and to whom Lawson Tait[9] gives great credit in discussing the subject.

Lawson Tait[9] said, "I believe it to be more than likely that the real cause of this accident is the coincidence of a set of circumstances the most important of which is the destruction or insufficiency of the ciliary movement." Since Tait made this statement, however, investigators have shown that often the cilia are not destroyed. Moreover, the condition of round-cell infiltration, of destruction of the surface epithelium, of agglutination of the septa of the tubes, of edema and fibrosis, which are frequently present in the ectopic tube, are stated by some pathologists to depend on the condition of the existing pregnancy or the recent rupture of the tube rather than a preexisting inflammation. Careful sections of the tubes also show that in some cases the ovum has lodged in a blind passage supposed to be a congenital abnormality.

Webster[10] states that the ovum always imbeds in müllerian tissue and Huffman,[11] on theoretic considerations, carries his idea farther by stating that the ovum always imbeds, in cases of ectopic pregnancy, in anomalous imbedding areas. While these theories are attractive, they lead away from the clinical idea of inflammation and tend to place the predisposing cause of the condition on an unchangeable hereditary basis rather than on the basis of previous inflammatory affections which are preventable. Moreover, it should not be forgotten that decidual reaction of early pregnancy has been noted in the tissues of practically all the organs of the lower abdomen, including the omentum and the appendix.[12] Leo Loeb[13] recently concludes that guinea-pigs do not have ectopic pregnancy because it is impossible to create in them a decidual reaction outside the uterus. One reason for the frequency of ectopic gestation in human beings undoubtedly depends on the ability of the tissues into which the ovum penetrates to develop decidua, which affords the ovum an adequate soil for development, but this does not eliminate the fact that pelvic inflammations often result in deformities of the tubes, which causes the ovum not infrequently to imbed outside the uterus.

A clinical summary of the cases here reported is presented in chart form and from this it will be seen that the average age, the multigravida, the number of preceding induced and spontaneous abortions as well as attacks of gonorrhea, the period of relative sterility and the microscopic findings all point strongly to the clinical idea of Tait that many of the cases of ectopic gestation trace their etiology to a preceding pelvic infection. It might be added that gonorrhea plays the minor rôle, and that abortion, associated as it so often is with a more or less noticeable attack of salpingitis, is the major predisposing cause for this frequent, dangerous anomaly of pregnancy.

CONCLUSIONS

From a statistical study of 36,668 clinic patients, the relative frequency of ectopic pregnancy is estimated as follows:

General practice	Once in 2,820 cases
Gynecology	Once in 227 cases
Pregnancy	Once in 131 cases
Early pregnancy with hemorrhage (necessitating curettement)	Once in 7 cases

Lane Hospital.

ABSTRACT OF DISCUSSION

Dr. Joseph B. De Lee, Chicago: Ectopic gestation occurs not infrequently in the lower animals, the horse especially, the cow and others. I know an interesting case in a house dog, running for six or eight weeks with symptoms of peritonitis. A roentgenogram disclosed the location of the fetus, an operation was performed, and a happy recovery made. As to the frequency of ectopic gestation, in my early years, in my hospital services everything except the actual delivery of a baby was assigned to the surgeon or to the gynecologist, and therefore, the obstetrician did not get the cases. He was considered perhaps one or two degrees better than a midwife, and of a different sex. This was the only distinction that I could learn. But as I began to assert my rights, and obtained all the obstetric cases, I found that the frequency of extrauterine pregnancy was increased. Perhaps we are losing sight of the point that so-called colics shortly after marriage, sometimes diagnosed as appendicitis, are not infrequently ectopic gestation aborting through the tube. You all know prostitutes' or actress' colic, and occasionally you hear of an actress being carried off the stage in a fainting condition. These are frequently cases aborting through the fallopian tube, and if properly diagnosed would increase the number of ectopic gestations which occur.

Dr. Alfred B. Spalding, San Francisco: I am not very much of a veterinarian and cannot dispute the point with Dr. DeLee about the ectopics occurring in the lower animals, but a great deal of work along this line has been done by others and many of the supposed cases of the ectopics in lower animals have been considered to be due to rupture of the uterus and to a secondary implantation of the ovum in the abdominal cavity.

Also the relation of the tube to the double uterus in the lower animals is different from that found in the human being. Loeb's work was on guinea-pigs. He found that it was impossible to make them have an ectopic pregnancy by any mechanical or experimental means, and they are not supposed to have an ectopic from natural causes. He was able in one case to get a supposed ectopic from a suspected rupture in the tube, which later was found to be a rupture of that part of the uterus which forms the connecting link between the two.

Responsibility in Rural Sanitary Improvement.—Again, this is within the purview of the county health officer. But the broadening of the outlook of the resident of the rural district is not the obligation of one man or one profession. The duty is shared by the church, the sociologist, the teacher, the minister, the welfare worker, in fact by all who bear responsibility because of position or knowledge. Where to begin is a point to be considered by each institution or worker in his own locality, but that each should do his part admits of no discussion.—Oscar Dowling, *American Journal of Public Health*, May, 1915.

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[6] Aboulcassem Khalaf ben Abbas Ezzahraony.

[7] Campbell, William: A Memoir on Extra Uterine Gestation, Edinburgh, 1842.

[8] Parry: Extra Uterine Pregnancy: Its Causes, Species, Pathological Anatomy, Clinical History, Diagnosis, Prognosis and Treatment, Philadelphia, H. C. Lea, 1876.

[9] Tait, R. Lawson: Diseases of Women, Philadelphia, Lea, 1879.

[10] Webster: Study of a Specimen of Ovarian Pregnancy, Am. Jour. Obst., 1904, L. 28.

[11] Huffman, Otto V.: A Theory of the Cause of Ectopic Pregnancy, The Journal A. M. A., Dec. 13, 1913, p. 2130.

[12] Meyer, R.: Ektopiche Decidua, Ztschr. f. Geburtsh. u. Gynäk., 1914, lxxv, 760.

[13] Loeb, Leo.: Tr. Soc. Exper. Biol. and Med., 1913, xi.

STREPTOCOCCUS BACTEREMIA IN ENDOCARDITIS

ITS PRESENCE BEFORE AND DURING THE DEVELOPMENT OF ENDOCARDIAL SIGNS *

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The frequent occurrence of a bacteremia has long been suspected in certain cases in which blood cultures have always been negative. One has often felt that our blood-culture methods were very imperfect, that we failed to grow an organism when one was present. Rosenow's methods[1] are a decided advance and have placed in our hands means of investigating a large variety of diseases from which may come findings that will change present views of common diseases. The importance and wide range of the pathogenic influence of streptococci will become generally better appreciated and the association of certain diseases formerly often observed is even now being placed on a definite bacteriologic foundation.

In the heart clinic recently established at the Toronto General Hospital, in connection with the general medical outpatient clinic, it was felt that blood-culture methods similar to Rosenow's might well be applied to the investigation of cases of suspected endocarditis since this affection is so often observed in those who have never had rheumatism. It would appear reasonable that all cases of endocarditis are bacterial in origin, that the organism must be present in the blood for long periods at a time and could be demonstrated if our cultural methods were sufficiently perfected.

There was attending the medical outpatient department during the summer of 1914 a girl (the patient in Case 1) whose case had been diagnosed previously in Ward G as one of pulmonary tuberculosis. However, she had no cough or signs of activity and her morning pulse rate was too slow. Yet she had slight fever, the temperature reaching 99 to 99.4 on an average about twice a week. There was then no murmur present. It was this case that suggested the great value of an efficient blood culture. Success along this line has been attained even beyond expectations, so that now cases formerly diagnosed as cases of chlorosis, anemias, indefinite attacks of fever, obscure tuberculosis and especially "nervous breakdowns" are being called endocarditis.

In this method we have a means, second to none other, of diagnosing this interesting and important disease. Indeed in a few cases it has been the only evidence obtained. A bacteremia has been obtained before the onset of the murmur or thrill and in the presence of a normal temperature. Still this technic is not all-sufficient. A culture was taken in a case of endocarditis and general acute serositis following inflammatory rheumatism three or four weeks before death. The culture remained sterile and at necropsy streptococci were cultured from the heart's blood and were even found in direct smears from the spleen. Still, positive cultures have been obtained when scarcely suspected and in rather more than half of the cases investigated.

This communication is a preliminary report of the presence of a nonhemolytic streptococcus, usually, though not always, producing green on blood agar, in the blood in some twenty-six cases of endocarditis investigated by a modification of Rosenow's culture methods during the past six months. The first twenty-three histories are pointed out for special consideration, as most of them represent a class of very mild endocarditis from which it is thought that positive blood cultures have hitherto not been obtained. The last three are added chiefly for comparison as they conform to the variety commonly called in the literature "subacute bacterial endocarditis." Owing to lack of time and the depletion of the staff of the bacteriologic and pathologic departments by the war, in only a small percentage of suspected cases could cultures be made. Seven of the cases were found among the private patients of one of us (J. A. O.), in course of a small general practice in six months. At least as many others have been encountered in the same time in which cultures were not taken for reasons of age or convenience. During the same time only two cases of rheumatic fever have been treated in private practice and the three last cases (24, 25 and 26[2]) are all that have been recognized of subacute bacterial endocarditis of literature type during the same or longer time in both hospital and private practice. If the figures are at all representative, the incidence of a mild form of endocarditis, of the type to be described, must be far greater than the so-called rheumatic endocarditis, or the subacute bacterial (*Streptococcus viridans*) form. The relationship between these varieties remains to be determined.

In April, 1914, Simons[3] published a critical review of bacterial endocarditis of all forms, summing up very well indeed present-day ideas of this disease. He defines it as those cases (1) which are either acute or chronic, (2) are associated with the presence of bacteria in the valvular lesion and (3) in the circulating blood for some (usually a considerable) period of time and (4) are usually of fatal outcome. The idea is current that if organisms are present in the blood, especially in sufficient numbers to be recovered by culture, the case will end fatally in from a few weeks to two years. Simon uses the term bacterial endocarditis to include all organisms (except spirochetes). In this article, however, it is restricted to the type of case so well described by Osler,[4] Libman,[5] Schottmüller[6] and others, under such names as subacute infective or subacute bacterial endocarditis, endocarditis lenta, etc., and caused by a streptococcus variously named *Streptococcus viridans* or *mitis* (Schottmüller), the endocarditis coccus (Libman), modified pneumococcus (Rosenow), saprophytic streptococcus (Horder), and others. It is generally accepted that these terms all apply to the same organism now usually called the *Streptococcus viridans,* though it must be remembered that this term includes a variety of strains of all grades of virulence and having special "affinities" for many different tissues.

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* Presented before the Association of American Physicians, Washington, May, 1915.

[1] Rosenow, E. C.: The Newer Bacteriology of Various Infections as Determined by Special Methods, The Journal A. M. A., Sept. 12, 1914, p. 903.

[2] Owing to lack of space a number of the case reports have been omitted from The Journal. They will be found in full in the authors' reprints, a copy of which may be had by sending a stamped directed envelope to the author.

[3] Simons, I.: *Critical Review, Bacterial Endocarditis*, Quart. Jour. Med., 1914, xxii, 291.

[4] Osler, William: Chronic Infectious Endocarditis, Quart. Jour. Med., 1908-1909, ii, 219.

[5] Libman and Celler: The Etiology of Subacute Infective Endocarditis, Am. Jour. Med. Sc., 1910, New Series, cxi, 516.

[6] Schottmüller: Endocarditis Lenta, München. med. Wchnschr., 1910, lvii, 617.

Recoveries from the type of *S. viridans* endocarditis described above are very rare but do occur. All recoveries reported can be counted on the fingers. Now if every case of endocardial inflammation (that is, the so-called simple endocarditis, not including the arteriosclerotic form) be bacterial in origin, then all Simon's conditions characterizing bacterial endocarditis should be fulfilled except the fourth. It is certainly safe to predict that all of these twenty-three cases are not going to end fatally in two or even twenty years. It is a well-recognized clinical fact that simple endocarditis can heal and remain healed for a lifetime.

Characteristic symptoms and signs of "subacute bacterial endocarditis" are malaise, fever of all grades, chills, progressive emaciation, weakness and anemia, hematuria, petechiae and other signs of embolism (hemiplegia, etc.) sweats, pigmentation, enlarged spleen and a terminal leukocytosis. Cases 24, 25 and 26 are types of this form of the disease, J. H. (Case 24) dying of emaciation, weakness and anemia, another patient (Case 25) of hemiplegia and one (Case 26) of embolism of the mesenteric artery, followed by gangrene of the small intestine, perforation and peritonitis. The majority of the main series (Cases 1-23) have shown very few of the preceding symptoms (some none), but some have shown just enough to suggest that they might be mild forms (Case 1 especially) and that there is a gradation in severity from the mildest (Cases 15, 7 and 8) to the severest case (Case 1) in which there is anemia, joint pains and considerable fever. Case 4 shows continual fever, nephritis and slightly enlarged spleen. None of the series is characterized by *progressive* emaciation, weakness and anemia. What anemia and weakness has existed has not progressed, indeed has improved, though of course the time of observation has been short. The patient in Case 1 has been under observation one year. Most of the patients look perfectly well, feel well and have no anemia. Hemoglobin below 60 per cent. was found in three cases. Six patients had no fever when the blood culture was obtained or while under observation, except a slight rise for a few days following removal of tonsils. The characteristic temperature appears to be an irregular one, normal all day, often for some days at a time, yet reaching 99 or 99.5 two or three days a week at irregular times of the day. To detect this the temperature must be taken systematically for considerable periods of time.

In seventeen cases the diagnosis was obscure, and was cleared up by the culture. In two or three, tuberculosis was suspected and may be present. T. D. (Case 9) conformed to the textbook description of chlorosis. Some suggested gastric ulcer. Two patients had symptoms somewhat similar to those in mild cases of typhoid (G. F., Case 11, and Mrs. H., Case 16). In fact both had suspicious Widal reactions and G. F. had an enlarged spleen and erythematous spots on the abdomen. But neither had the prostration, coated tongue, or malaise of typhoid, and were ill too short a period of time. E. K. (Case 4) had symptoms of meningitis. But the most characteristic group was that made up of "neurasthenics." Nine complained of fatigue, weakness, depression, irritability, restlessness, crying attacks, etc. "Nervous breakdowns" were common. The preponderance of young adult females in the series was striking. Five were males and eighteen females. Seventeen were between the ages of 16 and 41. Now, when one is consulted by a neurasthenic, the temperature is taken carefully for two weeks, and if fever be present in the slightest degree, or even in the absence of fever, if a history of tonsillitis is obtained, and diseased tonsils and endocardial signs found, a blood culture is taken. Some seventeen neurasthenics have been investigated and a positive culture obtained in nine cases. Seventeen had no cardiac complaint or symptoms when first seen. Eight had, or developed while under observation, a precordial pain, radiating to the left shoulder and down the arm, usually associated with dyspnea and brought on by exertion. This anginal pain in many cases was apparently quite out of proportion to the physical findings and often associated with cutaneous hyperesthesia. Tonsillitis was the usual precursor. In the children (Cases 2, 11 and 22) it was the continuance of the fever after tonsillitis that suggested endocarditis. One waited three or four weeks after the acute attack of tonsillitis before the culture was taken.

A history of tonsillitis occurring in other members of the family was noted in ten cases. In the case of R. F. and G. F., brothers, the mother is subject to tonsillitis and was ill one year with "low fever" at 19. During the last winter the two boys, the mother and the nurse had, each, two or three attacks. In another family the spread of tonsillitis and associated diseases was remarkable. The mother, who has often had nervous breakdowns, had tonsillitis in December. Shortly afterwards the husband had it also, followed in a month by appendicitis, and two or three weeks later, by a second attack with operation. While he was in the hospital the daughter, aged 5, had tonsillitis, after which slight fever persisted for five or six weeks and a pulmonary and mitral systolic murmur developed for the first time. During this interval the baby had a sore throat. About the same time the nurse went home with tonsillitis. While she was away the other maid, the last member of the family, was taken ill with appendicitis and operated on. While she was convalescing the nurse, who had returned, had appendicitis also, with operation. While the little girl was ill with endocarditis the mother's sister came on a visit and two or three days after her arrival she too had an attack of tonsillitis. Several other members of the mother's family have had tonsillitis often, some with endocarditis.

L. M. (Case 7) is interesting, showing the relationship of tonsillitis, endocarditis, appendicitis and gastric ulcer. Chronic appendicitis is blamed for causing gastric and duodenal ulcer. Possibly the real explanation is that both are results of the one infection. None of the series showed cholecystitis but two patients had herpes zoster.

The mitral valve was affected in nearly every case; the aortic in only one or two. In three cases endocarditis was suspected, before the murmur developed. In two the culture was obtained before any murmur could be heard and in two others the only murmur present when the culture was obtained was a faint systolic heard in the second left interspace over the border of the heart. There is some reason for thinking that this pulmonary systolic murmur is very often, more often than is thought, a transmitted mitral murmur, heard over the left auricular appendix. In most cases of mitral regurgitation, when looking at the cardiac action with a good screen, one can see a quick systolic dilatation in the left heart-vessel angle, which suggests a left auricular appendix being dilated with regurgitating blood. This has been seen when only a pulmonary systolic murmur could be heard on auscultation. In three or four cases in which opportunity has been had for watching the development of mitral regurgitation the murmur was first heard in the pulmonary area and later (a few weeks, or in the case of Patient 1 nearly two months) in the mitral area. Moreover, in many cases of mitral incompetency a louder murmur is heard in the pulmonary area, or the space below it than at the apex; and in all cases of mitral regurgitation, observed recently, a pulmonary systolic was present as well as the mitral.

In only one or two of the series was any cardiac enlargement present and that not at all extreme (most in Cases 21 and 6). Four patients had a leukocytosis of short duration (Cases 1, 6, 14 and 19). Six showed signs of nephritis. Five had gastric symptoms. These are often very troublesome and difficult to explain. One had painful subcutaneous nodules on the hands. None had petechial hemorrhages.

Should the presence of the bacteremia alter the prognosis? Probably not, for we have learned from clinical experience that most of these patients get better and live many years. Most of them were too slightly ill to ordinarily be kept in bed. The prognosis of Patients 1 and 21 is uncertain. The latter has a severe anemia and syphilis. Next to these the cases of chronic endocarditis following rheumatism and chorea are most serious (Cases 6, 12, 13 and 14). Patient 6 is a small girl with a fairly well-advanced mitral stenosis. Still, even she should live longer than the two or even three and a half years allotted to the previously recognized cases of subacute bacterial endocarditis.

In treating them, at first in every case the patient was put to bed, with the idea that every one with an active endocarditis should be at rest. Most of the "nervous" patients improved rapidly while in bed, but six did not show much change. Of these six, four have shown improvement since being allowed to be up and about, especially in Cases 3, 10 and 11. E. J. (Case 1) got up against advice and she became no worse. In fact she has lower fever now than she has had for six months. She is the most ill of the series. Hers would be classed as a type of mild case of the subacute bacterial endocarditis of the literature. Eight patients have had their tonsils out while under observation. Of these one (Case 9) improved afterwards. Cases 2 and 10 were uninfluenced. Cases 16 and 22 have been too recent to draw conclusions. The other three patients were so slightly ill before the operation that no difference in symptoms was noted.

The patients were kept in the fresh air as much as possible, encouraged to eat and given iron. Quinin appeared to give benefit in one case. Autogenous vaccines were administered in seven cases. Large doses were worked up to, usually without reaction. Recently it has been customary to start with 500 million streptococci at the first dose and 1,000 million at the second in the effort to obtain a reaction. Two patients with these doses had local reactions (Cases 1 and 5). It is difficult to see any difference in the course of those cases in which the patients were given vaccines, and those in which they were not.

The organisms recovered in the cases cited in this paper are being studied both as to their reactions and by animal experimentation. A detailed report of the results will be given at a later date.

CONCLUSIONS

1. A streptococcus bacteremia is present in the great majority of cases of active endocarditis and probably in all in some stage of the disease.

2. Endocarditis more commonly follows tonsillitis in children and young adult females than is generally believed. Possibly this accounts for the frequency of mitral stenosis in females.

3. This low grade streptococcic endocarditis is much more common than the so-called rheumatic endocarditis.

4. A large number of persons showing symptoms of the neurasthenic type are really suffering from a subacute streptococcic endocarditis.

5. Endocarditis may be active for considerable periods of time without symptoms.

6. A family incidence of tonsillitis and endocarditis (also appendicitis, gastric ulcer and other diseases which are often of streptococcic origin) is of frequent occurrence.

7. The pulmonary systolic murmurs so frequently found in "run-down" and anemic individuals are rarely functional.

On the other hand they usually indicate mitral regurgitation.

REPORT OF CASES

Case 1.—E. J., aged 22, was admitted to Ward G, Toronto General Hospital, June 2, 1914, complaining of general weakness and backache for seven months with dizziness, fainting, dyspnea and palpitation. Her family history is negative. She has had measles, mumps and chickenpox and has been anemic since 17. Two years ago she was confined to bed three weeks with fleeting pains in many joints without tenderness or swelling. The doctor diagnosed grip or muscular rheumatism. From Christmas, 1913, she lost 30 pounds in weight; had morning cough and expectoration, with pains in various joints and throughout the chest till the time of admission. Examination showed some dulness with bronchovesicular breathing found over right apex with no râles. The heart was normal in size, sound clear and distinct. No murmurs. The tonsils were found diseased and removed in July, 1914. On admission, the blood count showed red blood cells 2,500,000, hemoglobin 58 per cent., white blood cells, 8,000. Urine normal. When discharged, July 28, the count showed red blood cells 3,700,000, hemoglobin 75 per cent. Her condition was much improved. While in the hospital the patient's temperature went above 99 five times in fifty-two days and reached 99 on seven other days. The pulse averaged from 70 to 80. The patient attended the outpatient department till December 8. During this time the temperature continued as described above. The pulse was slow in the morning—50 to 60—going to 90 and 100 in the afternoons. During August a systolic thrill in the mitral area was detected. In September a precodial pain developed, brought on by exertion and associated with dyspnea. At the same time there was a suspicion of a pulmonary systolic murmur. On December 8 the patient was readmitted to the hospital (on account of angina pain and a slight swelling of the feet) for a rest. At this time the heart was not enlarged and the presence of a mitral systolic murmur was questioned. A pulmonary systolic murmur on exertion could be heard. On December 18 her temperature rose to 100.5 and from then till now (June, 1915) her temperature has oscillated müller), the endocarditis coccus (Libman), modified pneumococcus (Rosenow), saprophytic streptococcus (Horder), and others. It is generally accepted that these terms all apply to the same organism now usually called the *Streptococcus viridans,* though it must be remembered that this term includes a variety of strains of all grades of virulence and having special "affinities" for many different tissues.

Recoveries from the type of *S. viridans* endocarditis described above are very rare but do occur. All recoveries reported can be counted on the fingers. Now if every case of endocardial inflammation (that is, the so-called simple endocarditis, not including the arteriosclerotic form) be bacterial in origin, then all Simon's conditions characterizing bacterial endocarditis should be fulfilled except the fourth. It is certainly safe to predict that all of these twenty-three cases are not going to end fatally in two or even twenty years. It is a well-recognized clinical fact that simple endocarditis can heal and remain healed for a lifetime.

Characteristic symptoms and signs of "subacute bacterial endocarditis" are malaise, fever of all grades, chills, progressive emaciation, weakness and anemia, hematuria, petechiae and other signs of embolism (hemiplegia, etc.) sweats, pigmentation, enlarged spleen and a terminal leukocytosis. Cases 24, 25 and 26 are types of this form of the disease, J. H. (Case 24) dying of emaciation, weakness and anemia, another patient (Case 25) of hemiplegia and one (Case 26) of embolism of the mesenteric artery, followed by gangrene of the small intestine, perforation and peritonitis. The majority of the main series (Cases 1-23) have shown very few of the preceding symptoms (some none), but some have shown just enough to suggest that they might be mild forms (Case 1 especially) and that there is a gradation in severity from the mildest (Cases 15, 7 and 8) to the severest case (Case 1) in which there is anemia, joint pains and considerable fever. Case 4 shows continual fever, nephritis and slightly enlarged spleen. None of the series is characterized by *progressive* emaciation, weakness and anemia. What anemia and weakness has existed has not progressed, indeed has improved, though of course the time of observation has been short. The patient in Case 1 has been under observation one year. Most of the patients look perfectly well, feel well and have no anemia. Hemoglobin below 60 per cent. was found in three cases. Six patients had no fever when the blood culture was obtained or while under observation, except a slight rise for a few days following removal of tonsils. The characteristic temperature appears to be an irregular one, normal all day, often for some days at a time, yet reaching 99 or 99.5 two or three days a week at irregular times of the day. To detect this the temperature must be taken systematically for considerable periods of time.

In seventeen cases the diagnosis was obscure, and was cleared up by the culture. In two or three, tuberculosis was suspected and may be present. T. D. (Case 9) conformed to the textbook description of chlorosis. Some suggested gastric ulcer. Two patients had symptoms somewhat similar to those in mild cases of typhoid (G. F., Case 11, and Mrs. H., Case 16). In fact both had suspicious Widal reactions and G. F. had an enlarged spleen and erythematous spots on the abdomen. But neither had the prostration, coated tongue, or malaise of typhoid, and were ill too short a period of time. E. K. (Case 4) had symptoms of meningitis. But the most characteristic group was that made up of "neurasthenics." Nine complained of fatigue, weakness, depression, irritability, restlessness, crying attacks, etc. "Nervous breakdowns" were common. The preponderance of young adult females in the series was striking. Five were males and eighteen females. Seventeen were between the ages of 16 and 41. Now, when one is consulted by a neurasthenic, the temperature is taken carefully for two weeks, and if fever be present in the slightest degree, or even in the absence of fever, if a history of tonsillitis is obtained, and diseased tonsils and endocardial signs found, a blood culture is taken. Some seventeen neurasthenics have been investigated and a positive culture obtained in nine cases. Seventeen had no cardiac complaint or symptoms when first seen. Eight had, or developed while under observation, a precordial pain, radiating to the left shoulder and down the arm, usually associated with dyspnea and brought on by exertion. This anginal pain in many cases was apparently quite out of proportion to the physical findings and often associated with cutaneous hyperesthesia. Tonsillitis was the usual precursor. In the children (Cases 2, 11 and 22) it was the continuance of the fever after tonsillitis that suggested endocarditis. One waited three or four weeks after the acute attack of tonsillitis before the culture was taken.

A history of tonsillitis occurring in other members of the family was noted in ten cases. In the case of R. F. and G. F., brothers, the mother is subject to tonsillitis and was ill one year with "low fever" at 19. During the last winter the two boys, the mother and the nurse had, each, two or three attacks. In another family the spread of tonsillitis and associated diseases was remarkable. The mother, who has often had nervous breakdowns, had tonsillitis in December. Shortly afterwards the husband had it also, followed in a month by appendicitis, and two or three weeks later, by a second attack with operation. While he was in the hospital the daughter, aged 5, had tonsillitis, after which slight fever persisted for five or six weeks and a pulmonary and mitral systolic murmur developed for the first time. During this interval the baby had a sore throat. About the same time the nurse went home with tonsillitis. While she was away the other maid, the last member of the family, was taken ill with appendicitis and operated on. While she was convalescing the nurse, who had returned, had appendicitis also, with operation. While the little girl was ill with endocarditis the mother's sister came on a visit and two or three days after her arrival she too had an attack of tonsillitis. Several other members of the mother's family have had tonsillitis often, some with endocarditis.

L. M. (Case 7) is interesting, showing the relationship of tonsillitis, endocarditis, appendicitis and gastric ulcer. Chronic appendicitis is blamed for causing gastric and duodenal ulcer. Possibly the real explanation is that both are results of the one infection. None of the series showed cholecystitis but two patients had herpes zoster.

The mitral valve was affected in nearly every case; the aortic in only one or two. In three cases endocarditis was suspected, before the murmur developed. In two the culture was obtained before any murmur could be heard and in two others the only murmur present when the culture was obtained was a faint

June 5: During all of this time his temperature was normal with the exception of two days following the operation when it reached 99.5 and 100 respectively.

CASE 6.—Miss B, aged 8½, weighed 3½ pounds at birth. At 2½ years she had adenoids and otitis media. The adenoids were removed. The heart was normal. In June, 1912, she began to be restless at night with night terrors, which lasted six weeks. Then she began to have nausea and pallor in the mornings with no elevation of temperature. On the fourth day her heart was said to be badly diseased. After three weeks there was marked muscular twitching and loss of voice, said to be chorea. She was confined to bed until the end of October. All of this time no record of temperature was kept. In the beginning of November she was allowed to be up and in December the doctor said the heart was as well as ever it would be. In February, 1913, she contracted a catarrhal cold and looked very tired. The doctor found the pulse rate 145 and the heart violent and irregular in action with a low afternoon temperature. Twitching movements of muscles again appeared. In a period of improvement in March the tonsils were removed. She was confined to bed until June 5 but was not allowed to walk until September, at which time the heart was apparently normal in size and no murmur could be made out. In October, after strenuous exercise, a soft systolic murmur could be detected.

In December 1913, she had a slight catarrhal cold. Between this and Easter, 1914, she had two colds with high temperature, but was only confined to bed for two or three days. The heart seemed unaffected. The child continued active and strong except in September, 1914, when abdominal tenderness led to a reexamination and it was stated that no abnormal condition could be found in the heart. In November she was examined again for abdominal pain. At this time there was a slight systolic murmur. In February, 1915, she had a catarrhal cold, contracted from the mother, marked sore throat, glandular enlargement, high temperature, and a leukocytosis of 19,000.

The heart was dilated, very rapid, with a harsh presystolic and systolic murmur. In April a Rosenow blood-culture gave a plentiful growth of *S. viridans*. Leukocyte count, 11,000. At this time quinin—3 grains four times a day—was administered. The temperature gradually fell to normal in about two weeks' time. Vaccine 1,000,000,000 increased to 2,500,000,000 every fourth day. Only once was there local reaction. The pulse rate ranged from 88 to 110. On June 10 the child was allowed to get up. The pulse rate increased only 5 to 10 beats during the first three or four days, then remained about 100 until the present date. The child is up and playing about, six hours a day. At no time throughout the course has there been found any abnormal urinary secretion.

CASE 7.—L. M., aged 24, a nurse girl, entered Ward G for investigation of symptoms of indigestion consisting of heartburn and nausea. She also complained of weakness and fatigue. Her mother died of heart disease at 37. The patient's tonsils were removed incompletely (?) ten years ago. She had appendicitis with operation six years ago; tonsillitis two years and 1 month ago; two attacks of gastric ulcer twelve and nine months ago. Has vomited "coffee grounds." The organs are normal except the heart, which shows a rough mitral and pulmonary systolic murmur with no cardiac enlargement. The tonsils were badly diseased. Red blood cells, 4,800,000; white blood cells, 8,000; hemoglobin, 75 per cent. Urine normal. Test meal and bismuth meal revealed nothing abnormal. Tonsils were removed May 23 and showed marked disease. Cultures from the tonsils and the Rosenow blood-culture showed *S. viridans*. The temperature reached 99 occasionally. The patient felt perfectly well after a week's rest in bed.

CASE 8.—E. B., aged 25, a music teacher, was referred from Dr. L. on April 23, 1915, for investigation, on account of two attacks of iritis lasting three weeks. She complained of being run down, tiring easily, headaches and some depression. Has had headache over the right eye all her life. She was operated on for fibro-adenoma five years ago and hernia eight years ago. One month ago she had tonsillitis. Her sister is subject to tonsillitis. The mother died of appendicitis. On examination the patient, a well-nourished woman, did not appear ill. The heart showed no enlargement or thrill. There were systolic murmurs in the mitral, pulmonary and aortic areas. Spleen slightly enlarged, by percussion not palpable. Other organs normal. Red blood cells, 4,900,000; white blood cells, 6,600; hemoglobin, 85 to 90 per cent. Crypts of the tonsils contained an exudate. The temperature was normal. A blood culture on April 28 showed profuse growth of streptococcus. The tonsils were removed May 31. Cultures from the tonsils showed a similar strain of *S. viridans* to that obtained by blood culture. After six weeks' rest she feels perfectly well. Her temperature continues normal.

PROSTATECTOMY MISTAKES AND FAILURES *

GEORGE S. WHITESIDE, M.D.
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Having in mind some of my own failures and believing we can often learn more from the consideration of mistakes than from successes I sent out a questionnaire to a number of my friends, having for its object an inquiry into prostatectomy and the ultimate results of operation. Many did not contribute to this series because, as Dr. Schmidt put it, "If my case histories answered these questions I would write a paper of my own." Some others who did reply had evidently guessed at many of the questions to such an extent as would render the whole inquiry misleading if their cases were included. Therefore I take the work of thirty-four surgeons who give fairly good notes on 1,423 cases. These include my own. Many names will not be mentioned for various reasons.

Let us consider the errors in order to discuss their cause and the avoidance of them. In 1905, before this association, I read a paper publishing the fact that many surgeons had an average mortality of 20 per cent. in prostatectomy and only about 30 per cent. of good results. This paper was productive of great good, since Hugh Young in 1906 produced a splendid critical analysis of his cases in order to prove that when properly performed the mortality of prostatectomy is low and the results good. Even this monumental compilation has not accomplished all the missionary work necessary, as can be seen from the present series of cases. Young[1] sets forth the fact that when a prominent surgeon publishes a series of successful cases he incites many to try to imitate his success without proper instructions in his operation or understanding of the procedure or of the dangers to which he subjects his patient. The object of my paper ten years ago was largely to call to the attention of the surgical world the need of some method by which patients' lives or comfort may be safeguarded without injustice to any surgeon. In this present series about half the surgeons contributing, operating on more than half (820) of the 1,423 cases, are men of unquestioned training in prostatectomy by either the suprapubic or perineal routes. A comparison shows the mortality of the operation in the hands of these men to be less than 3 per cent. while in the hands of other surgeons of less experience in prostatectomy (although perhaps equally or more skilful in other forms of surgery) it is 26 per cent. Now is it right in these modern days to sit smugly by without comment, while patients are sacrificed to the ambition of men unprepared to do this operation properly? I do not speak of novices or immature boys just out of the medical school, but of men undoubtedly able to be of great help to their patients in other ways but who are not sufficiently experienced in this operation. There are four excellent general surgeons contributing each a small number to this series who are the exceptions that prove the rule. These four men have had only a few cases of prostatectomy, but no mistakes or failures or even a justifiable death can be quoted against them. I believe this exception proves that there is nothing mysterious about good results in prostatectomy; that after proper diagnosis and a well-considered operation these results are obtainable by any really good surgeon by methods similar to those used in other major operations.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Young: Hypertrophy and Cancer of the Prostate, Baltimore, Johns Hopkins Press, 1906, p. 2.

Let us consider for a moment the matter of diagnosis. In this critical analysis of a series of cases, methods of diagnosis can not be described in detail. It would seem unnecessary to call attention to the fact that a correct diagnosis is important before prostatectomy but evidently many otherwise careful surgeons consider the diagnosis of this condition so easy that they do nothing more than guess at the problem presented to them. Stricture of the urethra, spinal neuroses, condition of kidneys and other organs are frequently slighted or missed altogether in their examination. Even the most experienced operators occasionally overlook a case of prostatic or periprostatic cancer. In our present series, taking only the cases reported in which the surgeons have evidently tried to differentiate between hypertrophy and cancer, 7.3 per cent. of these patients were, in ultimate analysis, found to have cancer. This is a considerable percentage. It is worth reflection before operation.

Dr. A. says he operated in a case of cancer which proved very extensive. Result, urinary fistula which could not be closed before the patient died. It is possible that a thorough examination might have demonstrated this case to be inoperable and the patient had better have been left to die in peace. As a matter of diagnosis too, it is well to so examine patients that a wise choice of the suprapubic or perineal routes will facilitate the removal of the gland with best ultimate results. This is not the time or the place to open a discussion between the operators using exclusively the high or the low procedure. Many surgeons believe the high operation more suitable for one class of cases and the low for another. There is so much of the personal equation in this that universal agreement never will be possible. Watson of Boston attributes two deaths to "applying the perineal operation to very large prostates, one of them weighing 12, the other 10 ounces, after prolonging, by the effort, the operation, being forced to have recourse to the high operation and losing both patients from hemorrhage or shock, largely because of failure to choose the high operation in the first place." In a case of my own not long since the converse was true. The prostate was small but obstructing. The bladder contracted. In the suprapubic operation I accidentally opened the peritoneum and was finally obliged to have recourse to a perineal incision in order properly to enucleate the gland. Had I chosen the perineal route for this case in the first place no mistake would have occurred. This patient eventually recovered, but the operation was more severe than was necessary. L. Davis of Boston also reports to me having once accidentally opened the bowel in a suprapubic section. Possibly the patient had a small contracted bladder as mine just mentioned did.

In regard to the perineal operation it is only fair to note that a rough tearing-away operation, through a too small incision without much regard to the anatomy of the perineum, causes many absolutely unnecessary results such as rectal fistula and injury to the vesical sphincter producing incontinence. In our present series we note fourteen cases of rectal fistula and twenty-four of postoperative incontinence, all in perineal operations. I believe Young is right when he states that these mistakes are absolutely avoidable by doing an anatomically correct dissecting operation, under the guidance of the eye, and in absolutely condemning a blind manual enucleation of the prostate through a short perineal wound. Watson says, further, that "injury to the rectum is caused usually by pressure on the upper surface of the gland either when enucleating or when withdrawing it." In two cases in this series a rectal fistula was caused by passage of instruments, in one case a rectal tube and in another a urethral catheter. In this connection also one surgeon mentions a case of death from perforation of the sigmoid flexure by a rectal tube ten days after operation. These three accidents have nothing to do with prostatectomy, perineal or otherwise. Two cases of fatal hemorrhage, caused by passage of a rectal tube a day or two after suprapubic prostatectomy, present to us the danger of postoperative rectal instrumentation either for lavage or for the introduction of salt solution by the drip method.

In determining the probable chance of a patient before operation, perhaps the one most important examination is to ascertain the functional activity of the kidneys. This is unfortunately not so frequently done as it should be. Failure to do so accounts for the high mortality mentioned against the occasional prostatectomist and many general surgeons in this series. Uremia, so-called, after prostatectomy, should usually be labeled renal insufficiency. A sufficient number of tests of renal function should be made to indicate to the surgeon the gravity of the risk in each case. In cases in which absolute or even repeated retention of urine exists, the relief of operation should not be withheld because of the increased risk due to renal insufficiency, but a knowledge of the results of tests will warn the surgeon to safeguard renal function in every possible way. Dr. P. reports two patients dying of renal insufficiency within a few days after operation. This in spite of the fact that this surgeon is a skilful cystoscopist and might easily have ascertained the renal condition before operation, which he did not do. He says he has depended too much on clinical symptoms without a thorough cystoscopic and renal function examination before operation. Consequently his mortality was 30 per cent. Dr. L. had two deaths from uremia immediately after operation. He had not ascertained the functional activities of the kidneys. Some advocate two-stage operations although it has not been proved that a lower mortality results in consequence. Whether to operate immediately or to delay while medicinal and mechanical means are employed to improve the patient's general and renal conditions or whether a preliminary drainage operation is indicated are matters of grave concern, allowing for exercise of rare judgment guided by experience. In this connection must be mentioned the choice of an anesthetic when the kidneys are insufficient. Spinal anesthesia is probably safest. Perhaps it is safest in every case, but certainly it is so in the presence of chronic nephritis. Examination of the heart, blood pressure and lungs from the point of view of the surgeon rather than from that of the physician will eliminate many deaths from "shock" and will materially aid in the choice of the anesthetic. It would be well if all bladders could be examined cystoscopically. Unfortunately this is not always possible. The age of the patient, his mental attitude toward the proposed operation and the size of the obstructing tumor often prevent such an examination.

There is a condition which leads to unsatisfactory postoperative results which may be cystoscopically discovered but is rarely even guessed at without cystoscopy. This is the existence of vesical diverticula. Several contributors to this series mention them as the cause of postoperative residual urine (amounting in a few cases to almost complete retention), and diverticula are frequently responsible for an incurable chronic cystitis with or without calculi. Some say they do not wish to include such cases in an analysis of postoperative results. They should be included, because, if the prostatectomy is undertaken with a full knowledge of the presence of a diverticulum, then the added risk of an unsatisfactory result is carefully considered in connection with the other features of the case, or if the diagnosis is so incomplete that the presence of a diverticulum is not known before operation, then both surgeon and patient have accepted the chance of operation admitting of failure if a faulty guess has been made. Dr. G. considers postoperative cystoscopy important for the purpose of detecting mucous-membrane flaps which may close the vesical outlet like a valve. Cystoscopy may be done advantageously through the wound. In suprapubic cases this is easy. In perineal ones the patient must be in the extreme Trendelenburg or knee-chest position.

Diabetes is a not infrequent complication observed before operation. From a statistical point of view one would not choose to perform prostatectomy in the diabetic. Unfortunately, urinary retention or hemorrhage or pain frequently forces the surgeon to accept the increased risk in order to save life in spite of the probable unsatisfactory end-result.

Squier[2] believes the average duration of life, after the habitual use of a catheter is begun, to be less than three years. We each probably have in mind many exceptions to this but for the sake of argument we must place some limit. If three years is the average then prostatectomy undoubtedly offers to the average sufferer an added period of comfort in his old age in spite of the fact that some will afterward complain of pain, partial retention or other symptoms almost or quite as troublesome as those for which the operation was undertaken. In the present series this number was only 19 per cent. in the whole series and very much less in the cases reported by the best prostatectomists. Probably skill, judgment and large experience reduce the number of unsatisfactory after-results to about 7 per cent. instead of 19 per cent. as in this series, or 30 per cent. in my series of ten years ago. One surgeon writes that he "supposed everyone had none but successful cases" except himself.

F. S. Watson writes me:

> I am very glad to supply such information as my subsequent knowledge of my patients upon whom I have done prostatectomies permits. I lost sight of almost all the patients operated upon at the hospital relatively soon after they were discharged. Of the private patients who numbered about seventy I lost sight of a good many also. I cannot, therefore, regard the data I am sending you as at all complete. The same may be said of most of our surgical practice and that is the trouble with the statistical compilations of data concerning late results of our work. We do not know really just what proportion of them we can regard as actually cured in the strict sense of the word, or how many have suffered relapses, or failed to gain complete relief, etc. Hence the fallacies that are so often connected with statistical work. We rarely have the whole of any of our experiences, and knowing the whole might lead to very different conclusions.

M. Krotoszyner says:

> It is to be assumed that patients in whom the result was not entirely satisfactory might have gone elsewhere for further treatment, and I cannot, therefore, give you data about these cases, but those whom I see off and on and whose whereabouts I am able to trace for years after the operation, are apparently well and without urinary disturbances.

Dr. W. writes:

> Important mistakes resulting disastrously include two operations on patients in extremity. I would better have drained these cases through a ureter catheter passed into the bladder through a suprapubic troca cannula. Both died of uremia. The operation in both cases was short.

Dr. T. "wishes he had not operated upon a case of simple hypertrophy because the patient had frequency, pain and 8 oz. residual several years after operation." He also did prostatectomy in two unrecognized malignant cases. Both patients died within a few months.

Dr. X overlooked a diverticulum of the bladder. For this he later did a second suprapubic section on the same patient. He operated in one case of "atonic bladder" (etiology not stated) and in this case the patient still leads a catheter life.

Dr. B. says he considers prostatectomy ill advised in cases of known prostatic cancer. He had two such cases which he afterward wished he had not touched. Both patients died within two months after operation.

Dr. XY "used chromic catgut deep in perineal wound. Later an abscess formed which opened itself into the rectum. This urethro-rectal fistula never has closed."

It is generally a mistake to be in a hurry before, during or after operation. Insufficient preoperative preparation, inexact diagnosis, hasty judgment as to route or time to operate are only equaled as mistakes by too great haste during operation and lack of skilful care afterward. Prostatectomy, dealing as it usually does with unsound old men, to be successful should have every factor in its favor. The surgeon should be an experienced one and should carefully study his cases. The patient is best cared for in a well-equipped hospital and the operator should personally supervise the after-care of the patient, at least until he is up and about and has regained some of his strength. If these precautions before and after operation are followed the end-results will be generally satisfactory and the mortality low.

Journal Building.

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[2] Squier: Surg., Gynec. and Obst., October, 1913.

ABSTRACT OF DISCUSSION

Dr. Granville MacGowan, Los Angeles: It has been specifically emphasized on the medical profession that these operations must be performed rapidly. I am a reasonably slow operator yet I do not know of anyone who has a lower percentage of deaths than I have had. The percentage has been so low that I have been afraid to publish it. It is not often necessary to perform the operation of prostatectomy rapidly. One should take the time necessary to do what one intends to do thoroughly. The patient should be well prepared beforehand and well cared for afterward; then he will live and be comfortable. That is a point the essayist has brought out.

In every community are crippled old men who have been operated on rapidly for enlarged prostates without having their obstructions removed. Within the past three months I have seen two such people who were operated on in two of the very best clinics in America. They were operated on very rapidly but they still have their prostates. One paid $5,000 to have his removed but he has a beautiful intravesical growth, and lives a catheter life because he cannot get up courage to be operated on again.

Dr. A. B. Cecil, Los Angeles: The importance of ascertaining the function of the kidneys by the use of the phenolsulphonephthalein previous to operation, should be emphasized. I have used this test very extensively from the time it was first introduced and it undoubtedly gives in many cases data which cannot be obtained in any other way. I have heard the criticism that the excretion of phenolsulphonephthalein has been found to be relatively high and yet the patient died of uremia following prostatectomy, and that another recovered when the excretion of phenolsulphonephthalein was relatively low.

It must be remembered that phenolsulphonephthalein gives us only kidney efficiency but does not tell us how much work the kidneys have had to do. The patient with a low kidney efficiency may be better able to stand operation than a patient with a relatively higher efficiency, because by prolonged drainage, or because of low metabolism, he may not have retention of toxic products in the blood. So that not only must we determine the efficiency of the kidneys, but where this is low, retention should be suspected, and should be determined by cryoscopy or blood urea.

Dr. G. Shearman Peterkin, Seattle: I believe thoroughly in what Dr. Whiteside says. The important thing is that you should operate slowly. One of the advantages of operating slowly is found in spinal anesthesia. When you give a patient a spinal anesthetic it is going to last from three-quarters of an hour to an hour anyway, so what is the use in hurrying. You will not get any better results. You can take your time with spinal anesthesia in this operation when you cannot in other forms of anesthesia.

I want to speak of the diverticulum. In Seattle when we undertake these operations, after catheterizing the patient once, we inject a 2 per cent. silver iodid solution, then take a roentgenogram of the patient lying on his back, or best of all, lying on his stomach, with a tube up against the glutei. You will be surprised how many diverticulums you will see and how many bladder trabeculae you will see. It is even more advantageous than your cystoscopic examination, when you show your patient the diverticulum on the roentgenogram, because he knows then that you know what you are talking about and he is satisfied. If you simply tell him it is there, he may perhaps question your diagnostic ability.

Dr. L. W. Bremerman, Chicago: I think the two most important features in Dr. Whiteside's paper relative to the net results in prostatectomy are brought out in his remarks regarding the preliminary treatment and postoperative treatment. I think the operative procedure is the simplest part of the whole affair. I think most of us are too prone to see our patient today and operate tomorrow, without having made the proper functional tests, and how could it be otherwise than to expect that in a fairly large number of the cases the end-results will not be good. We should take our patients and study them carefully and get the general condition of the patient in proper shape for operation, and then proceed with the operation, and follow it with proper subsequent treatment, which may differ in the minds of many surgeons, but which should always be carried out to some extent. We are so ready to discharge our patients as cured when the abdominal wall heals up, and there is no leakage from the suprapubic or infrapubic wounds. We call our patients well. It is wise to keep those patients under observation for weeks, and discharge them from observation only when the bladder is clean.

The feature Dr. Peterkin brought out relative to a Roentgen-ray examination of his cases is an excellent one, and in all cases the genito-urinary surgeon should have the best possible means of diagnosis. I believe that the proper equipment of a genito-urinary surgeon's office today should include a Roentgen-ray apparatus, and every case should have roentgenograms incorporated as a part of the examination.

Dr. J. I. Butler, Tucson, Ariz.: To avoid, especially in the perineal method, a complication spoken of by Dr. Whiteside, that is, rectal fistula, I have been in the habit of employing the simple procedure of divulsing the sphincter ani as practically the first step of the operation. The object and result of thus relieving rectal pressure is obvious. I think this procedure valuable, and make the suggestion here because I have not seen it in print or in other clinics than the ones I have been connected with. It is carried out just as in hemorrhoid or fissure operations. Of course the levator ani muscle is also sectioned across in front. This permits the use of the Murphy drip in postoperative treatment.

Dr. Hiram R. Loux, Philadelphia: One point of interest in Dr. Whiteside's paper is the postoperative treatment by the drip method of irrigation. That method we have used in our clinic for quite a long time, and it occurred to us that the oozing which follows along the margin, or follows prostatectomy, is positively kept up persistently by the continuous irrigation. The question might be well discussed as to what advantage one really derives from the continuous irrigation. Recently, I talked with Dr. Young and I brought up the question. He told me that he was not irrigating as much as he did some years ago. I have found that the trouble from oozing proceeds for a period of eighteen to twenty-four hours following the removal of the prostates, and that by stopping the drip method of irrigation the clots properly form, instead of being washed away. This continual oozing causes a depression of the patient to some degree.

Dr. George S. Whiteside, Portland: In regard to Dr. Simpson's discussion, some of us who live in the far west do not have the advantage of the Johns Hopkins Hospital and urea blood tests convenient to our hand, and it seems to me that almost the same results can be obtained by the ptyalin test in the urine, and the Tycos blood pressure apparatus.

Dr. Peterkin has brought out a very valuable suggestion that I had entirely forgotten about. He told me about it before. Dr. Bremerman spoke of preoperative and postoperative treatment. It seems to me that is exactly why the real up-to-date genito-urinary surgeon has better results in prostatectomy, on the average, than the general surgeon; because of the fact that he does pay attention to preoperative treatment and postoperative treatment.

Dr. Bremerman is quite right. We should not lose sight of the patient too early. In this series of cases that I have quoted here a very large number of the men did not know whether their patients had residual urine two years afterward or not.

Dr. Butler spoke of rectal fistula and the stretching of the sphincter. Stretching the sphincter does not help in those cases in which the fistula is of mechanical origin, caused by punching through into the rectum at the time of the operation, either with the finger or with some instrument.

Dr. Loux spoke of a postoperative irrigation treatment. I may have misled him on that. I did not say that I did any irrigation after prostatectomy. I do not irrigate them at all for at least two weeks. Convalescence is more satisfactory without lavage than it used to be when frequent washing was the rule.

VERUMONTANITIS *

W. J. PENNOCK, A.B., M.D.
SPOKANE, WASH.

Symptoms ascribed to inflammation of the verumontanum were noted as early as 1839, when Baxter stated that many patients were seen suffering from frequency of urination and a violent throbbing or spasm on passing the last few drops of urine, and that he believed these symptoms to be due to an affection of the mucous membrane in and about the verumontanum.

The veru as an anatomic entity was not recognized by the anatomists, who gave hazy and inaccurate descriptions, Gray, for instance, stating that the verumontanum is a narrow longitudinal ridge formed by an elevation of the mucous membrane and its subjacent tissue — 8 lines in length by a line and a half in height. The sinus pocularis, he describes as a culdesac, one-fourth inch in length, projecting backward in the substance of the prostate behind the middle lobe. The erroneousness of this description was rendered evident with the advent of urethroscopy, but it remained for Rytina to demonstrate the actual gross and histologic anatomy of the gland.

Embryologically the veru is developed from the united lower ends of the atrophied müllerian ducts, which explains the origin of its glandular tissue, and it is in derivation homologous with the uterus and vagina.

Fig. 1.—Section through lower portion of sinus pocularis showing invaginating processes. From photomicrograph.

Rytina has differentiated the organ into a central glandular and a peripheral stromal portion, the glandular portion, consisting of groups of glands showing numerous intra-acinous proliferations, and these infoldings are composed of several layers of epithelial cells, in type varying from columnar to squamous. The peripheral portion is made up of a fibrous-tissue stroma with an occasional glandular acinus and the organ is encapsulated at its base with dense bands of fibrous and elastic tissue. Much eleastic tissue was demonstrated in both peripheral and stromal portions.

PATHOLOGY

There may be simple hyperemia or an edema of the veru and the mucous membrane about and notably posterior to it. The veru may be evenly distended until it practically fills the lumen of the urethra, or smaller, with its surface showing small cysts or ulcerations. In pyogenic cases purulent material may protrude from between the swollen lips of the utricle and in these cases pus often is expressed from the orifices of the lateral lobe prostatic ducts in the prostatic sinuses on each side of the veru. In the acute cases, usually, the inflammation of the veru is only part of the general hyperemia and edema of the prostatic mucosa. In the chronic cases, the surrounding mucous membrane is nearly normal, while the veru is clearly defined, hypertrophied, firm, infiltrated and fibrotic. Michailoff reports cases of calculi protruding from the utricle. Microscopically, Rytina has studied only the infective type of verumontanitis. He finds the essential lesion in these cases to be a submucous and periacinous round-cell infiltration. He also demonstrated in serial sections the infection traveling the entire length of the sinus pocularis.

As I have not felt justified in removing the entire organ in any nonpyogenic case, I have not been able to get sections of the complete gland for examination. Specimens removed by rongeur in the line of treatment comprise necessarily only the hypertrophied upper portion, and show merely hypertrophic changes. It is desirable that we should have sections through the glandular portions to demonstrate if any adenomatous change is present.

ETIOLOGY

Infection by pyogenic organisms, while fairly frequent and probably a necessary concomitant of prostatitis and vesiculitis should not be emphasized as an etiologic factor, as the infection of the veru is less important than the infection of either prostate or vesicle, impossible to eradicate until the subjacent infection has terminated, and is liable to withdraw our attention from the more important noninfective cases. Neisserian infection is undoubtedly common and it is worth noting that the veru may become infected by a descending infection from a pyelitis without definite involvement of the bladder, and the patient's most distressing symptoms may be due to the verumontanitis.

There are many etiologic factors in the nonpyogenic cases.

1. Coitus interruptus is a fairly common cause. My records force me to believe the practice to be more general than we have thought and I now embody the question in all case histories. Obrowski believes we should regard as causative factors any deviation from the normal sexual act that provokes a rapid fall of the curve of orgasm, as by these the automatic reflex contraction of the dilated blood vessels is interrupted, preventing the normal return of the vessels to their collapsed condition of rest. The repeated disturbance of the normal curve causes a lowering of tone of the local blood vessels, resulting finally in their remaining in a state of semidilatation; the hyperemia thus induced being the first stage of inflammatory change. If these partially dilated and relaxed blood vessels are irritated by protracted repetition of the sexual act, a paresis of the vascular muscle results, and the unphysiologic overstimulation produces an eventual paresis of the spinal innervation center, the function of which is to change the condition of the vascular spaces from

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

that of the maximal dilatation, intended for a short time, to the state of normal quiescent contraction.

2. Ungratified sexual desire, as exemplified by persons allowing their passions to be aroused by intimacies, while refraining from the sexual act, falls in the same class as coitus interruptus. The maximal dilatation of the blood vessels is maintained for a greater length of time and a longer relaxation and consequently a more pronounced stasis is produced.

3. Masturbation is so evidently unphysiologic that I simply mention it to call attention to the fact that after an inflammation has been produced by the practice, the continual irritation of the inflamed veru may make it almost impossible for the patient to break himself of the habit. I desire to emphasize the need of examination of the veru in all cases of onanism in the adult. Cole states that often masturbation is the cause rather than the result of verumontanitis.

SYMPTOMATOLOGY

The symptoms of verumontanitis may well be divided into those referable to the urinary and those referable to the genital systems, the individual case usually showing symptoms referable to only one system.

1. Urinary symptoms:

(a) Urinary frequency: This varies from urination every fifteen to thirty minutes, with a nearly constant interval desire to urinate, in the acute cases, to every one and one-half to two hours with no interval distress in the chronic cases, in which annoyance may be caused only by interrupted sleep.

(b) Urinary precipitancy.

(c) Burning sensation in the deep urethra, sometimes referred to the end of the penis. This may occur only for a few minutes following urination, may be constant or, quite often, may gradually increase during the urinary interval, forcing the patient to urinate in the endeavor to alleviate the sensation. I had one patient who had this symptom for a few hours each day, the remainder of the twenty-four hours his condition being entirely normal.

(d) Terminal tenesmus is present in the acute cases.

(e) Hematuria is present in the acute and subacute cases, varying from macroscopic blood in all three glasses — a few drops of blood extruded at the end of urination — to microscopic blood in the third glass.

(f) Pyuria is of course present in the pyogenic cases.

(g) Shreds of mucus embedding a few white and red blood cells are often noted in the nonpyogenic cases.

(h) Urinary obstruction or retention: Swinburne believes that inflammation of the veru induces spasmodic contraction of the compressor muscle, causing marked obstruction, and cites cases in which patients have difficulty in urinating, with residual urine as high as 16 ounces, in which the caliber of the urethra was normal and in which treatment of the inflamed verumontanum produced cure.

(i) Nocturnal enuresis occasionally occurs.

(j) There may also be mentioned an occasional symptom, dribbling of urine, a sensation of wetness in the urethra and a lack of the normal sensation at end of urination.

2. Genital symptoms:

(a) Diminution of sexual power ranging in degree from poor erection to absolute impotence. Michailoff believes the atonic form of impotence to be due entirely to a hyperemic stagnation in the region of the veru. Orbowski reports 310 cases of impotence in which the diagnosis of typical verumontanitis was made in 261. Of the 261 patients all but 16 were cured by treatment of the veru. Of the atypical cases more than half were not improved by treatment. He believes that in the 16 typical cases the lack of success was due to insufficient consideration of the secondary psychic manifestations. It must also be noted that a purely psychic impotence may develop, the patient presenting, also symptoms due to a demonstrable inflammation of the veru, prostatic urethra or trigon.

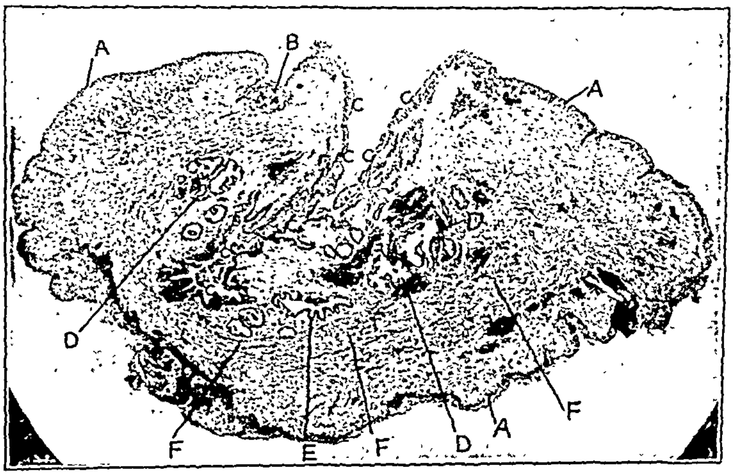

Fig. 2.—Section of normal verumontanum showing course and structure of sinus pocularis: *a*, mucous membrane; *b*, pit formation; *c*, sinus pocularis; *d*, central group of glands, some showing infoldings; *e*, duct; *f*, capsule; *g*, stroma. (After Rytina.)

(b) Premature, usually, occasionally delayed, ejaculation.

(c) Painful ejaculation: This symptom is common in the acute and subacute cases and usually is evidenced by a sharp stabbing pain, often referred to the perineum, sacral or coccygeal region. In some cases there will only be a burning sensation in the deep urethra, persisting for some time after ejaculation. This burning sensation is probably due to the inflamed mucosa surrounding the veru, while the sharp pain is undoubtedly due to the sudden stretching of the ejaculatory ducts, the lumens of which are diminished in caliber by the round-cell infiltration in the surrounding tissue.

(d) Priapism is, I believe, rare, although the acute cases sometimes show increased erections due to the irritation of the nerve ends in the posterior urethra.

(e) Nocturnal emissions: These are due to the infiltration of the collicle, which produces a mechanical atrophy of the muscles of the ejaculatory ducts.

3. Other symptoms:

(a) Referred pain is common in these cases. Some of the patients complain of a dull ache in the suprapubic region, but a great many suffer from actual pain, in the lumbar region particularly. This pain is sharp, often severe and remittent in type. This is often the only symptom the patient complains of and an inflamed veru is undoubtedly the cause of many, so-called, lumbar myalgias and neuralgias. The pain may also be referred to the testicle, coccyx or rectum.

(b) The suprapubic pain is common only in the acute cases, in which, with the inflammation of the veru there is hyperemia of the mucosa posterior to it and of the trigon. A persistent, mucoid, urethral discharge is sometimes present. Many of these patients are so neurotic that their symptoms must be regarded as due both to the actual lesion and to psychic disturbance.

DIAGNOSIS

I do not feel that the symptoms present a symptom complex. As I have stated, the cases usually present either urinary or sexual symptoms exclusively and not the admixture of both that we would expect: therefore we must, in any case showing any of the symptoms, regard the veru as a possible causative factor until eliminated by examination. In a routine genito-urinary examination, any undue sensitiveness in the prostatic urethra to the passage of bougies should arouse suspicion of verumontanitis.

In the urethroscopic diagnosis, examination of the verumontanum alone is not sufficient; the mucous membrane surrounding it must be examined carefully and if that is inflamed the trigone and bladder should be examined; the trigon and prostatic mucosa often being hyperemic, edematous and bullous in appearance. The straight tube of Young affords a better picture of the entire mucous membrane than the fenestrated curved tube, and facilitates treatment of the surrounding mucosa.

Diagnosis of inflammation of the veru should be made only after thorough examination of the prostate and vesicles and elimination of pathologic conditions of the kidney and bladder. The urethroscopic examination should not be made until after any irritation induced by the passage of bougies or instruments has subsided, as, otherwise, oozing of blood may obstruct clear vision. The passage of the urethroscope should not cause hemorrhage from a normal veru, and the presence of any bleeding, I feel, evidences pathologic change.

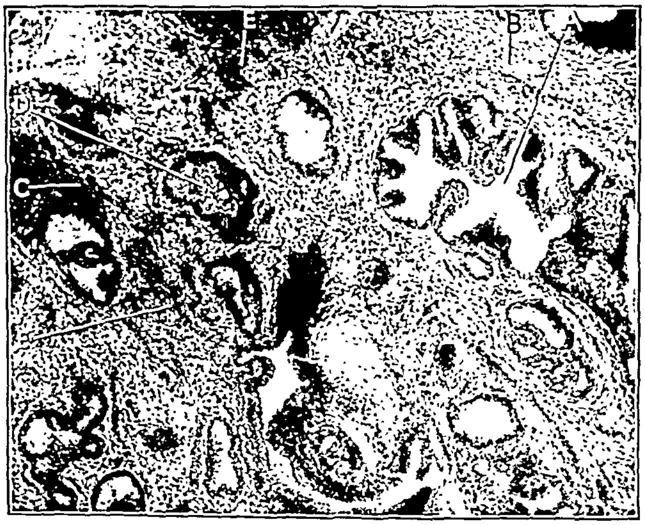

Fig. 3.—Section through an infected verumontanum. Infection is limited to left half; right half is normal: *a*, normal acinus showing infoldings, suggests prostatic hypertrophy; *b*, normal stroma; *c*, peri-acinous infiltration with round cells; *d*, normal acinus replaced by round-cell infiltration; *e*, infected stroma. (After Rytina.)

TREATMENT

In the pyogenic cases, emphasis must be laid on termination of infective processes in the prostate and vesicle, and treatment by injection of the sinus pocularis, while valuable, necessarily is only an adjunct in cases in which its infection resists the treatment directed to the prostate. In the acute nonpyogenic cases, treatment must be directed to the inflamed mucous membrane as well as the veru. I have seen several cases in which the mucosa of the prostatic urethra was so hyperemic and edematous that it was impossible at first clearly to outline the veru, but after one or two applications of a 5 to 10 per cent. silver nitrate solution to the mucous membrane, its condition returned to normal; the veru became well defined and the application of a strong silver nitrate solution to the veru itself cleared up the case. In the acute cases the local application of the weaker silver nitrate solution to all the inflamed mucosa of the prostatic urethra gives decided relief from the symptoms, which we must remember are not ascribable to the veru alone.

In the subacute cases I use 20 per cent. silver nitrate in those showing a soft, somewhat cystic veru, fused silver nitrate when the veru is larger and firmer, and confine the application to the veru alone. In these cases I neutralize the silver nitrate with sodium chlorid before removing the tube. In the chronic cases, I amputate the hypertrophied portion and apply fused silver nitrate. Hawkins states that if a little oil is left in the urethra after the application of the silver that the patient suffers much less. He uses eucalyptus 1 part, charcoal-filtered cylinder oil 7 parts.

The possibility of epididymitis developing during treatment must be considered even in nonvenereal cases. I have had cases develop several days after applying silver nitrate to the veru, and without other etiologic factor. I find that the treatment, particularly of the chronic cases, requires a great deal of tact. There is so much of the neurotic element in many of these men that the local condition must not alone be considered, and particularly if there is diminution of sexual power, the patient requires an optimistic prognosis and general tonic treatment. If this is neglected, the patient will not be cured even if the veru is restored to normal. Inflammation of the veru is also the basic factor in many neurotic and neurasthenic cases, as the neurologists are now recognizing. Gardner reports one patient who was committed to a state hospital for the insane because it was thought the patient imagined a pain in the neck of the bladder; the case clearing up on treatment of the veru.

As soon as the veru is normal in appearance, even if the patient still complains of symptoms, I stop all treatment, assure him that he will recover completely, advise him against worrying over his condition, make him take plenty of outdoor exercise and above all emphasize the fact of his eventual recovery.

REPORT OF CASES

Case 1.—A painter, married, aged 43. He denies venereal disease. During the last year he has had a feeling of irritation at the neck of the bladder, particularly when working. Urinary interval, two hours. He has a constant interval desire to urinate. Urination is not painful. There is no tenesmus or blood. The sexual act is normal. Genitals, urine, prostate, vas and vesicles are normal. A bougie causes pain in the prostatic urethra. The verumontanum is large, dark red and very tender. Silver nitrate stick applied three times gave entire relief from symptoms.

Case 2.—A bookkeeper, married, aged 25. He denies venereal disease. Three and one-half years ago he developed pain and irritation at the neck of the bladder. The condition had persisted and become gradually worse. He urinates every one to one and one-half hours. For three hours every day the patient feels normal; the remainder of the time he has a constant desire to urinate. He has a slight burning sensation in the deep urethra. The urine occasionally has shown white and red blood cells, but no bacteria. The verumontanum is twice normal size and very sensitive to pressure. The silver nitrate stick was applied. The first treatment gave relief from symptoms for eight days. In all, the patient was treated five times, improving after each treatment, but noticing some recurrence of symptoms after each treatment but the last. Four months after the last treatment the patient reported himself free from symptoms.

Case 3.—An accountant, married, aged 33. Patient had gonorrhea ten years ago and a symptomatic cure in three months; complains of pain in coccyx, particularly at night. He has loss of normal sensation during the sexual act. Urination is normal and painless, the urine negative. Genitals, prostate, etc., are normal. The verumontanum is inflamed, bleeding on touch, with a bleb on the left margin. Applied silver nitrate 20 per cent. once and 10 per cent. once. Four months later the patient reported himself free from coccygeal pains. Sexual powers and sensation are normal.

Case 4.—A porter, married, aged 24. The patient denies syphilis but had gonorhea five years ago, which persisted for several months. Urination interval is normal and painless. He has loss of sexual sensation. For some time he has had severe pain in the lumbar region, both sides. This pain is severe enough to make him seek treatment. The urine is negative. Examination revealed nothing but the severe pain produced by a bougie in the prostatic urethra. The verumontanum is intensely inflamed, filling the end of the urethroscope. Applied silver nitrate 20 per cent. Backache ceased the day following the treatment, but returned ten days later. Silver nitrate stick applied five times gave entire relief from symptoms.

Case 5.—A mason, unmarried, aged 20. Patient denies venereal disease. One year ago he developed great frequency of urination with severe burning along the course of the urethra with severe tenesmus and terminal hematuria. Cystoscopy at that time revealed a normal bladder. He made a gradual improvement, leaving the hospital in three weeks. The symptoms did not entirely leave and, becoming severe again, the patient was in the hospital for two weeks, gradually improved and was free from symptoms for eleven months. The present attack came on suddenly. He urinates every thirty minutes day and night. The third glass is red with blood; urine negative except for red blood cells. Urinary and sexual organs are normal. Cystoscopy shows bladder mucous membrane normal; the trigon slightly edematous, not inflamed. The kidneys were catheterized. Urine was negative. The verumontanum was larger than normal, soft, and did not bleed on pressure. The silver nitrate stick was applied. The patient immediately improved after the application of silver nitrate, leaving the hospital five days later. Silver nitrate was applied three times at ten-day intervals until the verumontanum was reduced to normal size. Two months later the patient reported himself perfectly well.

Case 6.—A mechanic, married, aged 34. The patient denies venereal disease. July, 1914, he had a urethral discharge, which has persisted. The discharge is slight and contains a few intracellular diplococci. The prostate on the left side is hard and distended. The prostatic secretion shows 75 white blood cells to the field. The patient came under observation Oct. 10, 1914. Urination interval is one hour; nocturia, 8. There is severe tenesmus. Sometimes the patient has passed a little blood with the urine.

Octo. 28, 1914: Patient urinates every fifteen minutes, the urine showing blood. There is constant burning and tenesmus. Cystoscopy negative, with the exception of congested trigon. The kidneys were catheterized, the urine was negative.

October 30: Endoscopy revealed a swollen, distended veru. The silver nitrate stick was applied. Six days after treatment the patient showed much improvement, with urination every two hours. Nocturia was 0 and patient had very little discomfort. He immediately began gaining weight and strength. Silver nitrate was applied twice subsequently and when seen December 19 the patient was feeling well. Urinary interval two and one-half hours; nocturia, 0 and 1; urine, negative.

April 10, 1915: Urethroscopy revealed a normal verumontanum and patient free from symptoms.

Case 7.—A clerk, unmarried, aged 23. The patient denies venereal disease. Has practiced masturbation sixteen years. The genitals are normal. The passage of sounds caused severe pain in the prostatic urethra. The verumontanum is swollen, edematous, bleeding easily. Silver nitrate 20 per cent. was applied three times until verumontanum became normal. The patient had no difficulty in breaking himself of the habit as the irritability which caused the desire left him with the improvement in his condition.

Case 8.—A farmer, unmarried, aged 18. The patient denies venereal disease. He has bladder distress, frequency of urination and pronounced tenesmus. The genitals are normal. Urine, all three glasses are cloudy with pus cells, the third containing a few red blood cells. The urine from the right kidney is negative; urine from the left kidney containing pus cells, but no bacteria. Cultures and inoculations were negative. The bladder showed chronic cystitis. The verumontanum is swollen, very edematous, bleeding on touch, practically filling the urethra. Treatment of the verumontanum gave the patient practically complete relief from his symptoms. Urination became painless and at regular intervals, the pus remaining, however, in the urine, until the pyelitis was cleared up by lavage.

507 Paulsen Building.

ABSTRACT OF DISCUSSION

Dr. Edgar G. Ballenger, Atlanta, Ga.: I have recently made it a little easier to apply these treatments by a slight modification of the endoscope. I had one made with rounded edges so that it could be introduced without an obturator. The observation may be made as the instrument passes in and the verumontanum is more easily found. Patients suffering from verumontanitis are very sensitive in that portion of their anatomy and greatly appreciate gentleness and speed in these treatments. By using this endoscope the passage of urine into the instrument causes considerable less annoyance than with the usual endoscope.

Dr. W. J. Pennock, Spokane, Wash.: I was glad to hear Dr. Ballenger's suggestion with regard to the instrument. I am not quite satisfied with our instruments at the present time, and I am very glad that Dr. Ballenger has found something better. There is no question about the necessity of giving these patients as little pain as possible, as the treatment must necessarily be administered more than once and the patient is not usually very glad to come back to you. I go into the bladder with the endoscope and then draw the endoscope forward, feeling that it is quite important to make a careful study of the mucous membrane of the prostatic urethra.

Iron Bacteria.—It has been known for many years, says E. C. Harder, (*Science*, Sept. 3, 1915, p. 310) that some of the higher bacteria are concerned in the precipitation of ferric hydroxid from iron-bearing waters. Thus, in city water pipes the frequent turbidity of water containing a small percentage of iron and the occasional filling of the pipes with ferric hydroxid has been attributed to *Crenothrix polyspora*. Other forms have been found abundantly present in surface iron-bearing waters, and it has been asserted that such bacteria play an important part in the formation of numerous small deposits of bog iron ore. Harder thinks it possible that they may also be in part responsible for extensive beds of sedimentary iron ore. In a field study of the subject, Harder has found iron bacteria present in almost all iron-bearing waters, both surface and underground, including the workings of mines to a depth of several hundred feet. The last-mentioned fact, Harder thinks, suggests the possibility that certain underground deposits of iron ore have been formed by these bacteria.

THE VALUE OF THE COMBINATION METHOD IN THE TREATMENT OF CERVICAL CARCINOMA

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Although it has been known for centuries that cancer is peculiarly susceptible to heat, its application was not established on an intelligent basis until Percy, in 1912, experimentally proved that cancer cells would be destroyed when exposed to a temperature of 113 F. for twenty minutes, and, further, that the normal tissue would live in a temperature as high as 131.9 F.

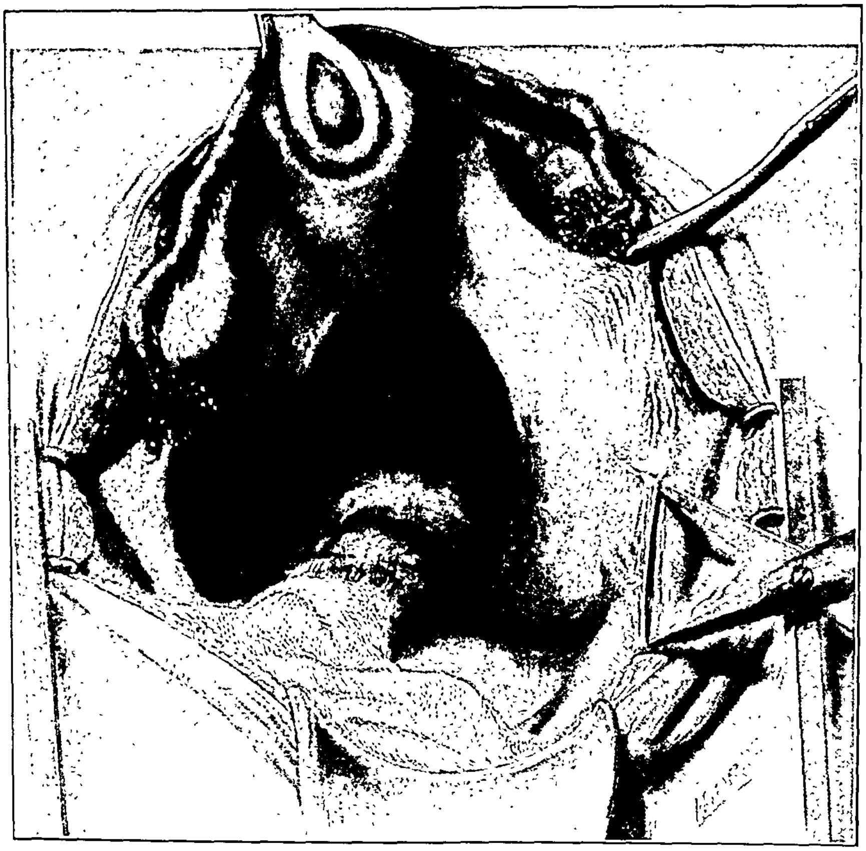

Fig. 1.—The right infundibulopelvic ligament put on stretch, bringing ovarian vessels into view. Mayo scissors in peritoneal nick at bifurcation of common iliac.

With this as a fundamental principle, he worked out a scheme by which heat could be applied to cervical carcinoma on a far more elaborate scale than had ever heretofore been possible. Up to this time we had been trying to realize the same brilliant results accomplished by Byrne of Brooklyn, but he left no definite technical plan to follow. Each worker groped along independent lines. There was no definite knowledge of the physical effect of heat on cancer cells, and consequently individual efforts ended in gross disappointment.

The perfection of this elaborate heat method marks a brilliant epoch in the cancer problem. Though possessing many admirable qualities, it does not seem to me, when viewed in the light of a cure, that it is a method to be *singly used.* It should be classed as a *valuable adjunct,* and its chief virtues are to be witnessed when combined with other equally valuable but operative methods.

In my first cases the hot irons were used only in advanced inoperable cases. Certain of these women showed such noted improvement, both locally and constitutionally, that it was disappointing to realize that their condition was only temporary. When the slough would detach, the bleeding stop, and the toxemia diminish, these desiccated, cadaverous individuals would be transformed into a state of apparent health. As a result of the stimulation through these initial encouraging results, the use of the method was broadened and was found to be admirably adapted to transforming cases less advanced, though still inoperable, into safely operable risks.

Two of our first advanced cases had severe hemorrhages following the detachment of the slough. In one instance, the hemorrhage proved fatal, and in the other was controlled by packing.

With the hand in the abdomen to control the degree of heat, both internal iliacs and one ovarian were ligated for the special purpose of coping with this serious complication. This step splendidly accomplished the desired end, since we have had no secondary hemorrhage within six months after its application. Though this preliminary ligation was done primarily to control secondary hemorrhage, its evolution has taught me that it possesses other commendable points.

In this extensive ligation, twenty-five arterial trunks are shut off, the uterus receives only a limited supply of blood through the one ovarian, and as shown by Dawbarn, the resulting starvation produces a marked retarding influence over the growth. Second, while the iliacs are being tied, the angle of the bifurcation of the common iliac can be explored for lymphatics, which, when removed, are a valuable prognostic guide as to the advisability and wisdom of further subsequent radical operation. Third, as a preliminary hemostatic for primary or later Wertheim removal, it notably controls operative hemorrhage. Last, as a result of these ligations, the slough seemingly detaches sooner, and the vault of the vagina clears more rapidly.

For purposes of discussion, cervical carcinoma may be conveniently divided into the following groups:

Group 1: Incipient cases. Ulceration strictly limited to cervix. Free mobility. No infiltration. Occasional unaccountable show. Menses slightly prolonged. Constitutionally unimpaired.

Group 2: Cervix well infiltrated with carcinoma. Growth just beginning to spread to vaginal walls. Uterus still movable, though there is a definite thickening in its lower and middle segment. No appreciable lateral infiltration. No pain in sides. Having copious bleeding. Secondary anemia and constitutionally below par. The type in which the radical operation is reluctantly considered from the standpoints both of primary mortality and of permanent cure.

Group 3: Either a crater or large cauliflower mass in vault of vagina. Notable lateral infiltration as well as involvement of vaginal wall at least an inch from cervix. Decided impairment of mobility. Pain in sides. Marked cachexia and anemia. Constitutionally and locally surgically impossible from radical standpoint.

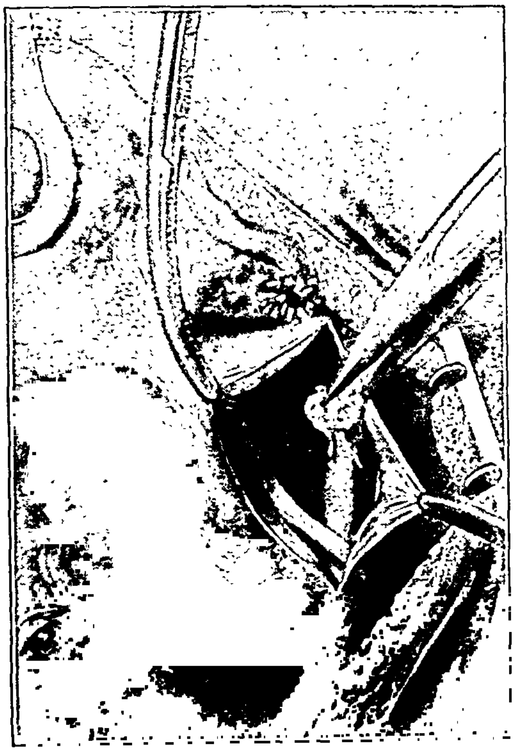

Fig. 2.—Bifurcation of common iliac with ureter attached to inner peritoneal flap and lymph gland being removed.

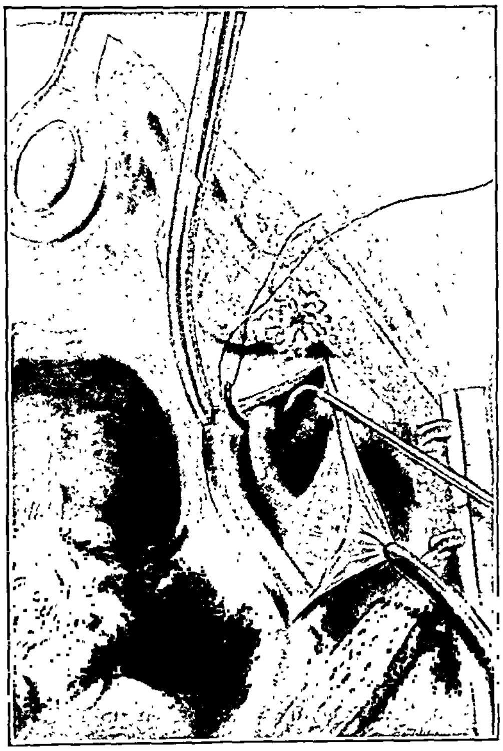

Fig. 3.—Ligation of internal iliac. Not necessary to open sheath. By lifting exposed vessel with forceps, needle can be passed without danger of injury to underlying vein.

Group 4: Hopelessly advanced. Conglomerate metastases of rectum, bladder and vagina. Inguinal lymphatics involved. Constant losing with foul odor. Constitutionally wrecked. Opium habitués.

FIRST GROUP

Cases falling in the first group are treated by combining at the one sitting the application of heat with the Wertheim removal. The abdomen is opened, thoroughly packed off, and as a prophylactic hemostatic measure, both internal iliacs are ligated, which excellently serves in reducing bleeding so frequently associated with the radical work.

The hot iron is now applied for twenty minutes, the hand being used within the abdomen as a guide to the position and degree of heat of the cautery. Heat is used here to destroy cancer cells, in the belief that the risk of grafting cancer through manipulation is thereby diminished; further, it aids in sterilizing the vaginal vault. Iodin is liberally applied to the vaginal canal, and the radical work immediately follows.

Where there exist no physical contraindications, the combination of these two valuable measures gives the best chance for permanent cure. I have seen fairly early cases in good physical condition treated only by the cautery, in which in six or eight months there would be a return of the disease at the site of the former burning. To follow the heat with radical removal unquestionably gives a better end-result. The heat adds not more than twenty-five minutes to the sitting, and with a good surgical risk, it is not too taxing to perform the Wertheim removal immediately afterward.

In extremely obese women of small stature, it is a physical impossibility to operate radically; furthermore, if it were possible, the primary mortality would be so high as to render the procedure unwise. Here the liberal application of heat offers the best and only chance, as these patients are unfit for the extensive operating, and yet can well withstand the abdominal incision for the introduction of the guiding hand.

SECOND GROUP

In the second group, the Percy method occupies a unique position in that it *converts* the constitutionally unfit into good surgical risks, and too, causes marked shrinkage in the local area. By employing it in combination with ligation of both internal iliacs and one ovarian at the first sitting, with a three and a half weeks' interval, these surgically doubtful risks are literally transformed into safely operable cases.

This procedure produces little or no shock; in fact, it is striking to see how readily these poor risks tolerate this first sitting. The plan adopted is to cook and ligate, and then let the patient remain in bed about ten days, at which time the slough detaches. The hemorrhage and toxemia having been controlled, the patient is permitted to return home and ordered daily douches and forced feeding.

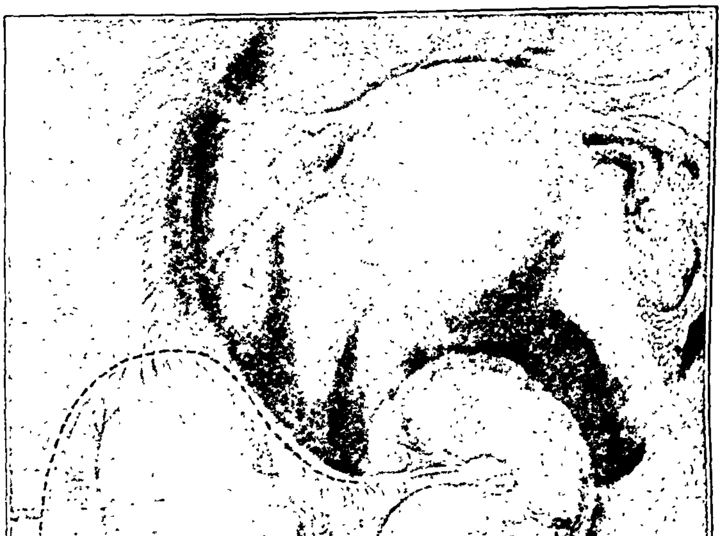

Fig. 4.—Line of dashes shows line of incision, should it be found necessary to reflect sigmoid to reach bifurcation of common iliac. Not as yet found necessary.

From three to five weeks after this first sitting, the picture has changed, the hemoglobin has risen from 15 to 25 per cent., the vessels are full, the entire economy has steadily improved and from being a questionable surgical undertaking, the case is lifted both locally and constitutionally into a frankly operable state.

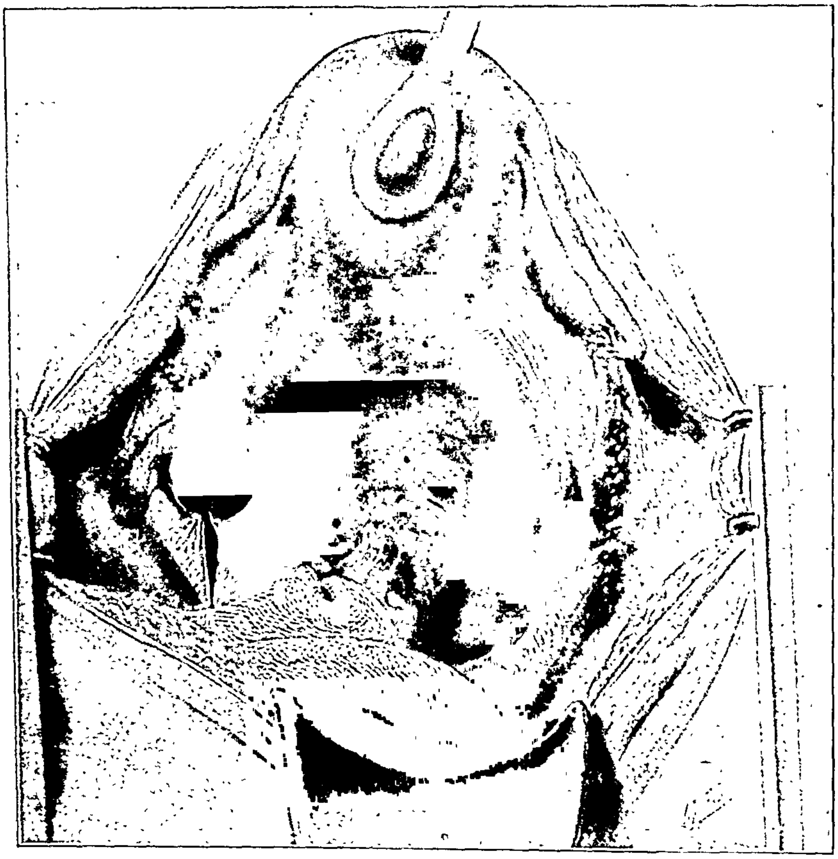

Fig. 5.—Peritoneal rents closed with continuous whip-stretch, full curved, round needle. Right ovarian artery tied.

Prior to my experience with the heat method, I can vividly recall certain patients who were clearly operable from a local standpoint, but who were notably depleted from hemorrhage, and after the major extirpation, simply did not have sufficient reserve force to get well. They would gradually lose ground and die on about the tenth day from no apparent cause, except exhaustion.

By the use of this two-stage plan, such cases can be radically improved, and I feel that it can be positively asserted that it is a method which *increases* the *operability* of cervical cancer, as well as *reduces* its *primary mortality.*

THIRD GROUP

The third group of cases has heretofore been considered hopeless. The patients would as a rule be superficially singed, and sent home to die. Since employing the elaborate heat plan as a routine in combination with internal iliac and one ovarian ligation, I feel that, though permanent relief is not as a rule to be expected, still much genuine comfort and *some* cures can be given this group.

Pathologists have taught us that it is not possible to tell from the macroscopic appearance of a cervical cancer just to what extent it has metastasized. The pathologist of the Cancer Hospital at London held routine necropsies in 100 unoperated cases with death of cancer, and found that in 46 per cent. of these cases, the lymphatics were not involved beyond the pelvis, and from the side of lymphatic invasion, these cases were curable from an operative standpoint. Even though we accept these flattering statistics with some reserve, it gives a reasonable basis for a cure in some advanced cases, and further explains some of the sporadic cures with the old zinc chlorid treatment.

The same combination plan is adopted in this group. While in the abdomen, the infiltration is specially studied with a view to possible removal, and also while ligating the iliacs the lymphatics are removed to be later sectioned for metastasis. If the infiltration is too extensive, or if the iliac glands are metastasized, the case is abandoned as a hope for radical cure. On the other hand, if the glands are negative and the large mass is believed to be partly due to a chronic infection, the woman is allowed to transform and subsequently is given the benefit of a radical operation.

In my list I have had two cases which, when first seen, were obviously inoperable, but after the use of the combination method, they changed so completely that the Wertheim operation was performed.

Much to my surprise, even after very careful search, no cancer cells could be found in either of these specimens. Though carefully feeling my way in this group, and not having as yet formulated a positive conclusion, my results thus far have been sufficiently encouraging to warrant further study. Where the condition is so aggravated as to prohibit radical surgery, the ligation and heat give great temporary relief.

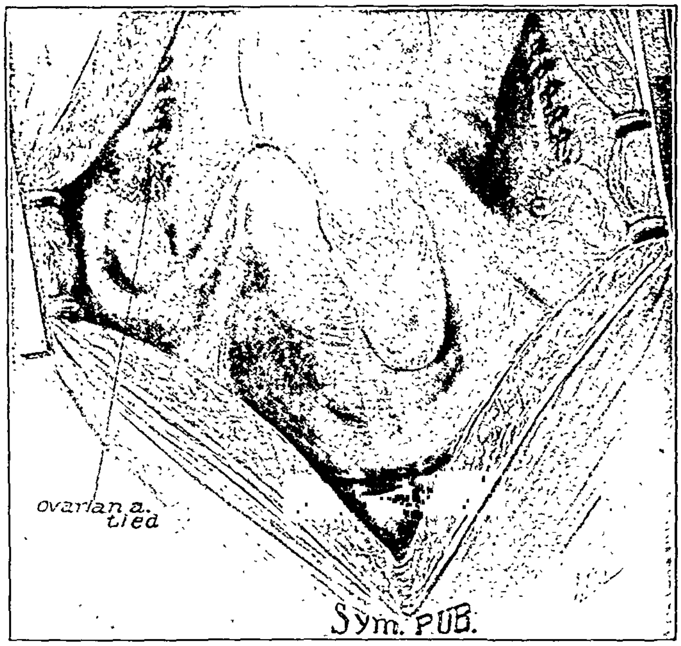

Fig. 6.—Ovarian artery tied and peritoneum closed over ligated internal iliacs. Hand grasping uterus with fingers extending down around basal structures to guide Percy cautery and control heat. Cautery schematically shown embedded in lower half of uterus—inserted by vagina.

In two of these advanced cases in which such noted improvement followed the combined method, the uterus having greatly increased in mobility, as well as a general shrinkage of the tumor mass having occurred, I thought it possible to perform the Wertheim operation. But when this was attempted, it was found as a result of the heat destruction that the upper two thirds of the uterus, when liberated, parted from the mass in the vaginal vault, thus rendering further radical procedure unwise, but still giving an opportunity to apply the heat to this remaining area through the abdominal route. Where the mobility of the uterus is solely employed as a guide to operability in these advanced cases, one will necessarily encounter this disappointing experience in a certain number of cases.

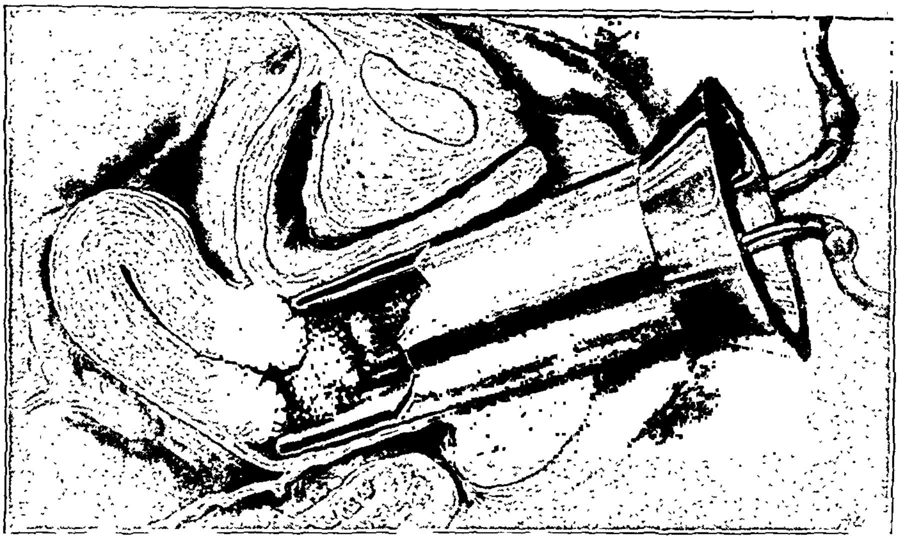

Fig. 7.—Gelpi's water-cooled speculum introduced into the vagina, bringing into view an external cervical carcinoma.

It is in the third group that the vesicovaginal fistulas are encountered. Five such complications have resulted in my cases. After the destruction of the initial mass and entire cervix, there remains a huge crater with suspicious nodular areas demanding further cauterization. Since the upper boundary of this cavity is the bladder itself, it is almost impossible to avoid damaging its wall in subsequent heat application. In order to overcome this feature, we are devising an accessory water-cooled speculum like a flat spoon to fit underneath this exposed vulnerable area.

Unfortunately, the third group is a very large one. In it are found some of our most interesting problems, and though further study is necessary before positive conclusion can be deducted, still it presents a field in which much can be done.

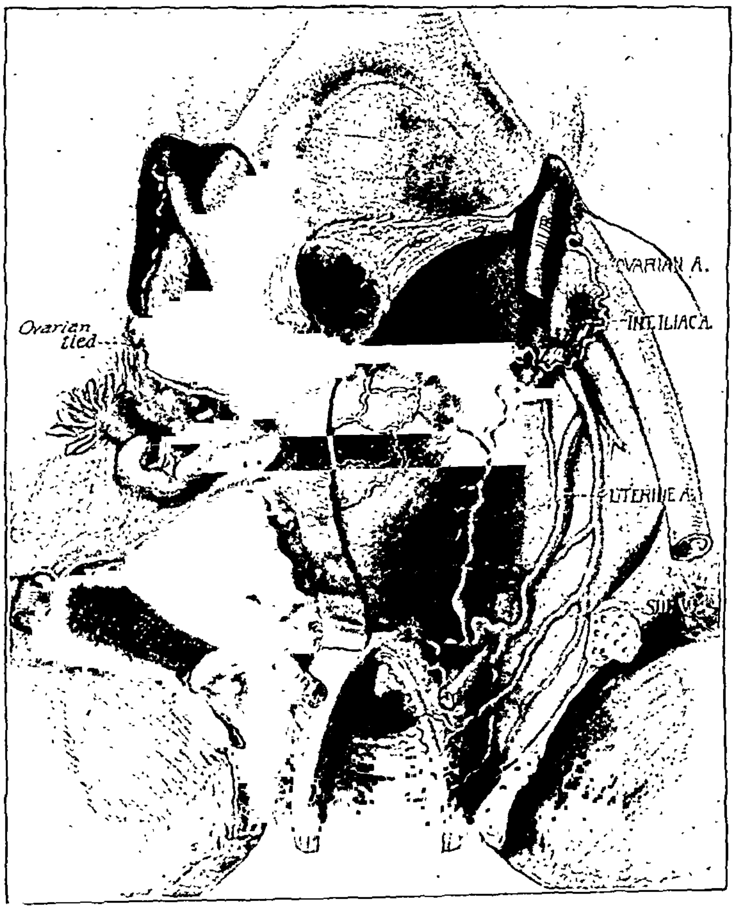

Fig. 8.—Semischematic figure showing uterine arterial collateral circulation via ovarian. Left internal iliac ligated, and right ovarian tied through peritoneum.

Permanent cures are not, as a rule, to be expected; but in view of my experience with this combination method, I feel that these patients should be more painstakingly studied and not, after the most superficial consideration, as is the usual custom, be relegated to the life of a morphin habitué. Thus far, through the use of this method, it can be stated that some surprisingly satisfactory results have been realized. In the majority, not only has there been given marked comfort, but a definite extension of life; and further, in a certain small number, there has apparently been given a cure.

FOURTH GROUP

The fourth group is the absolutely hopeless class. From early experience, I have learned that more harm than good follows any attempt toward local interference. It is to be hoped that, as a result of improved medical education, combined with the educational work now being so splendidly conducted by the Cancer Commission, this group will greatly diminish.

Last December, I presented a preliminary report of this work to the Southern Surgical and Gynecological Association, at which time I discussed the heat technic. Since this time, the only radical change in method has been the addition of extensive arterial ligation. This communication was based on the observation of twenty-five cases; the number has now increased to forty-two. While it would be most desirable to submit at this time a detail analysis of each case with end-results, this would not be feasible, since the work is still in its infancy. However, since the use of this combination method, it can be stated that there has not been a single primary death following the ligation and heating, or from the Wertheim removal.

Five years will have to elapse before end-results can be reasonably computed, but my experience with this plan of attack has so completely surpassed former methods of treatment, that I feel fully justified in presenting at this time the subject for discussion.

SUMMARY

1. The heat method alone has doubtful curative properties, and should be viewed in the light of a valuable adjunct in the treatment of cervical car-

cinoma. However, in extremely obese women, it offers the best and only chance for a permanent cure.

2. Heat should be used as a routine in all types of cervical carcinoma, except in hopelessly advanced cases (Group 4).

3. The ligation of both internal iliacs and one ovarian possesses definite merit, and when combined with heat, furnishes the best means of converting the borderline cases into frankly operable ones.

4. It cannot be too strongly emphasized that the combined application of heat and ligation of vessels, on the one hand, and total extirpation, on the other, in all except clearly operable cases, should be done as a two-stage operation.

5. In the combination of heat with starvation, we have a valuable means of markedly increasing the operability and of decreasing the primary mortality of radical extirpation.

6. Heat combined with extensive arterial ligation, followed by radical hysterectomy, offers the greatest possibilities for permanent cure.

GUINEA-WORM DISEASE

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The occurrence of a parasitic disease, which is spread by drinking water, and found in an army force, in a country generally free from these parasites, seems of sufficient interest and importance to warrant a rather extended study of the case. Dracontiasis or guinea-worm disease occurs frequently in Africa and East India. It is rare in the United States, only a few cases having been reported, and these are mostly imported, although Van Harlingen's case occurred in a man who had always lived in Philadelphia.

In man, the female worm develops in the subcutaneous and intermuscular connective tisue and produces vesicles and abscesses.

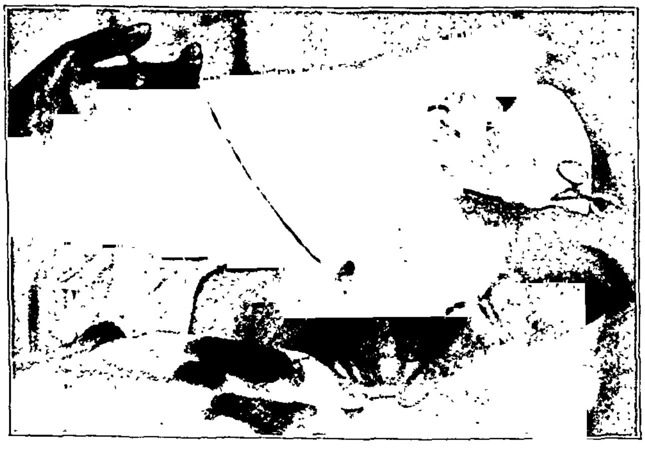
Fig. 1.—Guinea-worm being gently drawn from the subcutaneous tissue of the left foot.

The parasites are generally found in the lower extremities. Of 181 cases, 124 occurred in the feet, thirty-three in the leg, and eleven in the thigh. The worm is usually solitary, although six or more have been present in the same patient. The worm is cylindrical in form, 2 mm. in diameter, and from 50 to 80 cm. in length.

The parasite gains entrance through the stomach and not through the skin, as is usually supposed. The male and female are ingested. The former dies and is discharged, but the latter after impregnation penetrates the intestines and attains full growth in the subcutaneous tissue, where it remains for a considerable time and may be palpated beneath the skin, feeling like a nest of worms.

The worm, in its endeavor to rid itself of its large number of living embryos, burrows head first downward, until it reaches the foot or ankle, where the head, penetrating the skin, causes a vesicle in the epidermis, which ruptures and results in an ulcer, through which the head projects. After the distended uterus ruptures, and the embryos are cast off in a whitish fluid, the worm generally leaves the host. These embryos contaminate the water, and develop in the cyclops, a small crustacean, and it is likely that man is infected by drinking the water containing these developed larvae.

The history of our case is as follows:

Lance-Corporal D. L., Second Cameron Highlanders, Company D, has seen service seven and a half years, five of which he spent in India. Since October, 1914, he has been at the front in France. Before he entered the service, he was a blacksmith in Glasgow, Scotland.

Patient states that while swimming in the rear of the trenches, six weeks before, he was injured by a barbed wire, receiving slight flesh wounds of the left foot, below the internal malleolus, and of the right foot on the dorsal surface. He believed the wounds insignificant at the time, and painted both wounds with tincture of iodin, applied no dressings, and continued on duty. In two weeks the wounds were almost completely healed, but in the course of another week, the left foot became tender, swollen, and finally suppurated. The inguinal glands on that side also became swollen and painful. He does not know whether he had any fever or not. At this time he reported to his regimental surgeon, who opened the wound and applied wet dressings. The wound partially healed, after which he went to the trenches for seven days, and again his foot became swollen and tender. This time he was sent to the clearing hospital, where it was again opened, and, following which he arrived at this hospital.

The patient states that coincidently with the primary injury he noticed a white, raised area on the flexor surface of the left forearm. A member of his regiment who had served with him in India broke the vesicle and removed a worm, by carefully wrapping it around a lead pencil. It was 2 feet in length. The wound closed and is now the site of a small pigmented scar. In regard to the patient's previous history, he stated that he did not remember having had any of the diseases of childhood, but had suffered from a severe attack of tonsillitis in 1911. He denies any venereal history. During his five years' service in India, he enjoyed good health, except for an occasional chill, followed by sweats and rise in temperature. These attacks persisted in spite of prophylactic doses of quinin taken twice weekly. All the water he drank while in India had been previously chlorinated. His family history is negative.

Examination of the wounds on the median aspect of the left foot, below the internal malleolus, showed a large, infected, irregularly shaped ulcer, about the size of a silver 25-cent piece. Its ragged necrotic edges were undermined for a variable distance of from 2 to 4 cm., and several sinuses extended upward and exuded pus, and sanguinopurulent material. The base of the ulcer consisted of unhealthy and uneven granulations. The region about the wound and half way up the leg was quite tender. The inguinal glands on this side were enlarged and painful.

On the lateral aspect of the dorsal surface of the right foot was a small abrasion surrounded by an inflamed zone, which was also tender. The inguinal glands on this side were enlarged, but not very tender. Aside from local findings, the patient had a marked chronic pharyngitis, and acne vulgaris of chest and back. His chest and lungs were negative. Abdomen was tympanitic and somewhat distended, but no areas of tenderness were present. The spleen was not palpable. Liver, which was palpable, came just below costal margin. Reflexes were normal, and genitalia showed scars. Blood examination showed: hemoglobin, 85 per [illegible] red blood corpuscles, 5,000,000; white blood corpuscles, [illegible]00; differential count: polymorphonuclears, 54 per cent.; lymphocytes, 36 per cent.; eosinophils, 10 per cent. The urinalysis revealed the specific gravity of the urine as 1.024; slightly acid, no bile, albumin or sugar.

Under ether anesthesia, the feet having been rendered bloodless by a Martin constrictor, both lesions were opened. In the left foot about 3 c.c. of pus were found. Culture from this was made and later showed *Staphylococcus pyogenes albus* and *Streptococcus pyogenes*. When the necrotic subcutaneous tissue was being dissected, a long tortuous, cylindrical organism was noted, which could by gentle traction be partially dislodged from its bed. By too great or sudden traction the organism would break, but another coil could be found in the tissue, and again traction applied. One organism was removed in toto. It was impossible to judge the number of worms in this foot, as it was difficult to decide whether several parts of one or of more than one worm were removed. There were certainly at least two, as one entire worm was removed.

The conditions in the right foot were quite similar, but no worm was removed in toto. The report from the pathologist, Dr. R. L. Thompson, was as follows: "Specimen consists of several white stringlike parasites, varying in length, and tough in consistency. One of these seems to be a complete worm. The others are fragments of other similar worms. The complete worm measured 32 cm. in length by 3 mm. in circumference. The body is round, semitransparent, and filled with numerous small, milky, white bodies (embryos). The end of the worm tapers to a sharp point, which is slightly curved at the extreme tip. Diagnosis (by Sir William Leishman) *Dracunculus medinensis*, or guinea-worm."

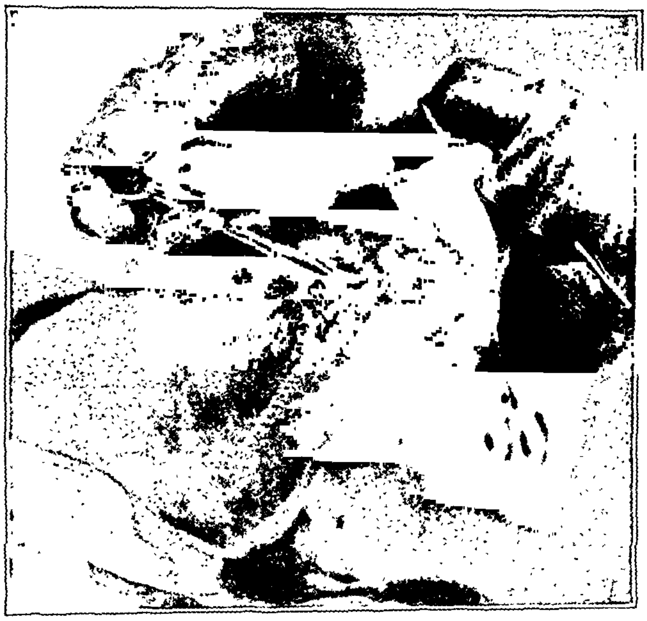

Fig. 2.—Necrotic tissue, and site of lesion on lateral aspect of right foot.

As this patient has recently returned from India, and as no other cases of guinea-worm disease have occurred in this vicinity, it is reasonable to suppose that this patient was infected in India, and that he has imported the disease.

The statement of the patient that the original lesion dated from an injury by barbed wire, and the occurrence of the worm at the site of the injury are worthy of note. Whether the worm was really the etiologic factor in producing the lesion, or whether it was attracted to the site of injury, is of course a question.

It seems that the removal of this worm may be effected better by prolonged traction, that is, wrapping the worm around an instrument and not allowing it to retract, than by operative procedure — endeavoring to excise the worm — as it may be divided and portions with embryos may remain and cause trouble later. The secondary pus infection should, of course, be treated by the usual surgical procedure.

A CASE OF CONGENITAL PERINEAL TESTICLE

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Urologist to the North Chicago Hospital
CHICAGO

The infrequency of congenital perineal testicle is best shown by the report of Grégan (Montpellier, 1913), who collected records of eighty-three cases up to the year 1913, but did not state what proportion of these were congenital, since this type is by far the more uncommon.

The literature dating from this time contains reports of three cases of perineal testicle, two of which were of the traumatic variety (Bevan, A. D.: The Surgical Treatment of Undescended Testicle, The Journal, Sept. 19, 1903, p. 718. Mulligan, R. A.: *Proc. Roy. Soc. Med.*, London, 1912-1913, vi. Simpson, J. S.: *Med. and Surg. Rep., Episc. Hosp.*, Philadelphia, 1914, ii).

I wish to report another case of the rarer type: the congenital form of perineal testicle.

The patient, a boy of 12, had complained for the past six months of pain in the perineal region when in the sitting posture, especially when suddenly arising and on running. The pain was described as dull and aching and recently increasing in intensity. His mother stated that when the boy remained seated he would constantly change his position, shifting from one gluteal region to the other. Examination showed that the patient was somewhat undersized but mentally normal. The right side of the scrotum was atrophied, and the left testicle was found normal in all respects. The perineal region showed an oval body which measured about 2.5 by 1.5 cm., located 5 cm. anterior to the anus and 2 cm. to the right of the median raphé. The mass gave a testicular sensation on pressure, and could be easily manipulated from the area just anterior to the anus to the region of the right external abdominal ring, but could not be placed into the scrotum. The mother then volunteered the information that the absence of the right testicle had been noted about two weeks after the child's birth, but that no further attention had been given to it.

At operation (Beck) an incision about 5 cm. long was made over the right external abdominal ring. The cord was seen emerging from the ring and extending down to the ectopic perineal testis. Attached to the lower pole of the testicle was a strong fibrous band, the gubernaculum testis, which was attached 2 cm. anterior to the anus and about the same distance from the median raphé. The gubernaculum was excised from the testis just below its attachment, and the somewhat underdeveloped te[illegible] placed [illegible] scrotum in the usual manner. T[illegible]ery wa[illegible] the patient leaving the hospital o[illegible]th day [illegible]

Four weeks later, the testicl[illegible] in n[illegible] and seemed normal in all re[illegible]

SARCOMATOUS PROLIFERATION (SARCOMA OF RIB)

IN A TRAUMATIC TUMOR SIXTEEN YEARS AFTER ITS FIRST APPEARANCE

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AND
LOGAN CLENDENING, M.D.
KANSAS CITY, MO.

The question as to how long cells which are malignant or potentially malignant can remain in the body without manifesting any tendency to grow, proliferate or metastasize is one of great interest which may throw considerable light on the entire subject of malignant tumors.

Paterson[1] describes a case of gastric cancer in which he operated two years after the onset of symptoms. He found an inoperable carcinoma at the pylorus and did a gastro-enterostomy. The patient continued in good health for six years, without any symptom of extension of the growth or metastasis. Here we have a known cancer which was present for eight years in a spot richly supplied with lymphatics, with no tendency to manifest the ordinary nature of a cancer.

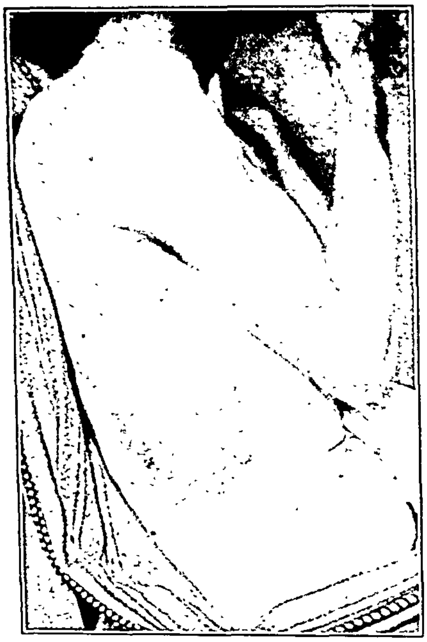
Fig. 1.—Tumor, painted with iodin.

Hertzler[2] has told us of a case of cancer of the breast in which he operated fifteen years ago. The patient has been under observation repeatedly in the interval. At the fourteen-year period she had had no metastasis or extension when she reported for examination. Nine months later she had a small recurrence in the upper end of the scar.

The following case, which deals with a sarcoma, is in line with these cases:

Summary.—Man, aged 36, received a trauma which resulted in the appearance of two small tumors over the region of the ninth rib. These tumors had been present sixteen years, when a sarcoma of the rib beneath them resulted. On removal, these tumors were seen to be sarcomas of the same structure as the sarcoma of the rib.

History.—The man, a farmer, was first seen by us Oct. 3, 1913. Family history was not significant. Personal history was negative for syphilis, rheumatism, tonsillitis and typhoid. At the age of 14, the patient was kicked in the right knee by a horse, sustained a fracture, and has had an ankylosed knee ever since. At the age of 19 he fell across a log, lighting on the right side of his chest in the axillary line. The injury was slight, but within a week or so two small lumps appeared under the skin at the level of the ninth and tenth ribs in the midaxillary line on the right side. They have always been painless, and have never grown sufficiently to notice; in fact, so far as the patient has noticed, they have always remained exactly stationary in size. They have been movable, the size of plums, and soft in consistency. His physicians, including ourselves, have always told him they were lipomas.

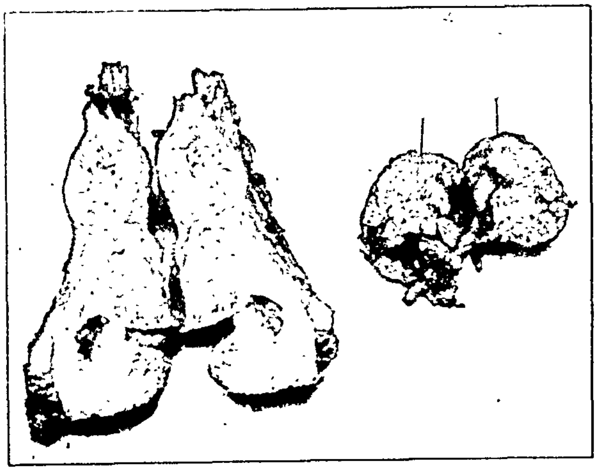
Fig. 2.—Same as Figure 3, with the tumors split open.

Nine months ago, without previous injury, he noticed that a hard lump had appeared over the ninth rib on the right side just under these old tumors. It was much larder, somewhat painful and not movable under the skin. It grew slowly at first, but has grown very rapidly during the last three months.

Examination.—Temperature, 98.5; pulse, 86; blood pressure, 120; leukocytes, 6,000; heart and lungs, no abnormalities. There is a hard mass, about 4 by 5 inches, over lower ribs on the right side. It is dense and adherent to the ribs. Two smaller masses in the same locality, movable under the skin, feel like lipomas.

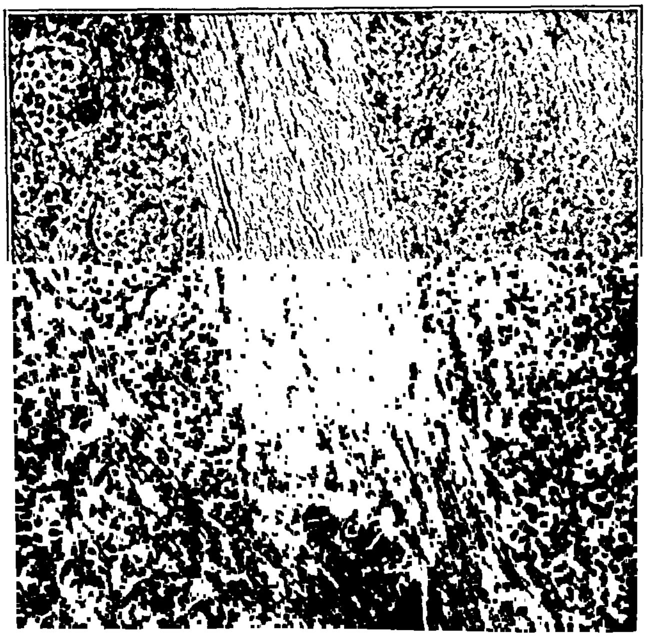
Fig. 3.—Photomicrograph of tumor on rib.

Operation.—Oct. 3, 1913, under gas-ether anesthesia, by the ordinary method, no attempt being made to use the negative pressure cabinet or intratracheal insufflation, a mass was revealed, comprising parts of the ninth and tenth ribs, which was removed by resecting these ribs without opening the pleura. A small plaque of growth on the pleura was revealed just under the site of the growth on the ribs, and necessitated the opening of the pleura for its removal.

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[1] Paterson, in Murphy's Clinics, iii, No. 1.

[2] Hertzler, A. E.: Personal communication to the authors.

The two small tumors previously mentioned were seen to be purplish encapsulated masses in the muscle and subcutaneous tissue, and were easily removed.

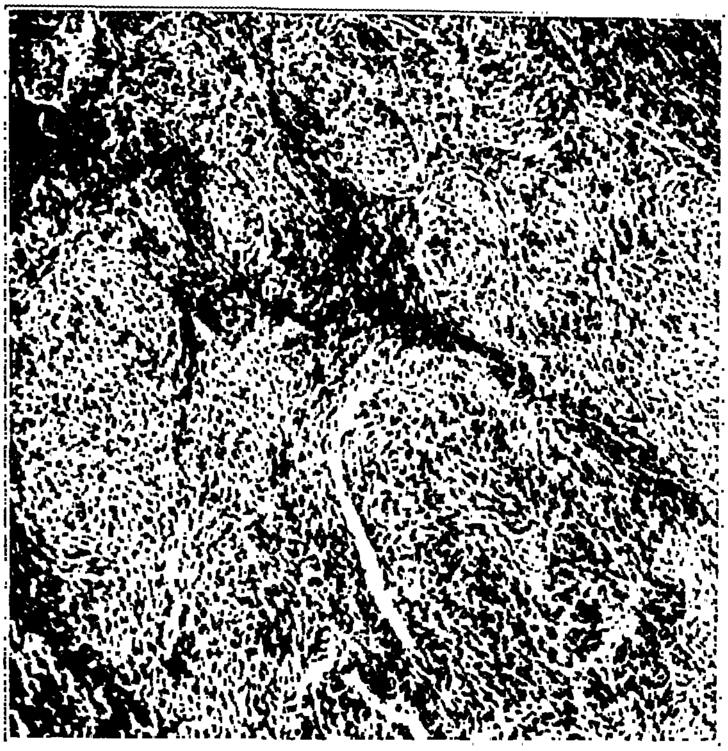

Fig. 4.—Photomicrograph of one of the small original tumors.

Pathologic Examination.—The material consisted of: (*a*) parts of two ribs united by a hard, dense, white fibrous growth, the size of a man's hand, and (*b*) two small lumps of tissue, which were soft and were encapsulated everywhere by a membrane as thick as the dura mater. On section, both of these showed the structure of a small round-cell sarcoma. The sarcoma from the ribs was interlaced with fibrous strands, while the small tumors were almost free from connective tissue framework.

Certain points in connection with this case may perhaps be emphasized. First, the identical structure of all these tumors: the original tumors and the new tumor on the ribs are all the same sort of sarcoma. Second, the complete encapsulation of original tumors. Third, the fact that they had been present for sixteen years without pain or growth.

The question arises whether they were sarcomas from the start, that is, whether they were the original focus of sarcoma, or whether they simply suffered in the general sarcomatous degeneration in the region. Whether, in short, the sarcoma was primary in the ribs or in these small tumors. Whoever defends the hypothesis that it was primary in the ribs will have to take into consideration the necessity for an explanation of the fact that a sarcoma developed at the exact site of a trauma received sixteen years previously.

Lund[3] reviews the surgery of sarcoma of the chest wall. The entire number of cases collected by him was twenty, to which he added one personal case. The case here reported is therefore of interest on account of its rarity as well as its pathologic significance.

Rialto Building.

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[3] Lund: Ann. Surg., 1913, lviii, 206.

FISTULA OF THE ESOPHAGUS AND BRONCHUS

REPORT OF A CASE, WITH ROENTGENOLOGIC FINDINGS

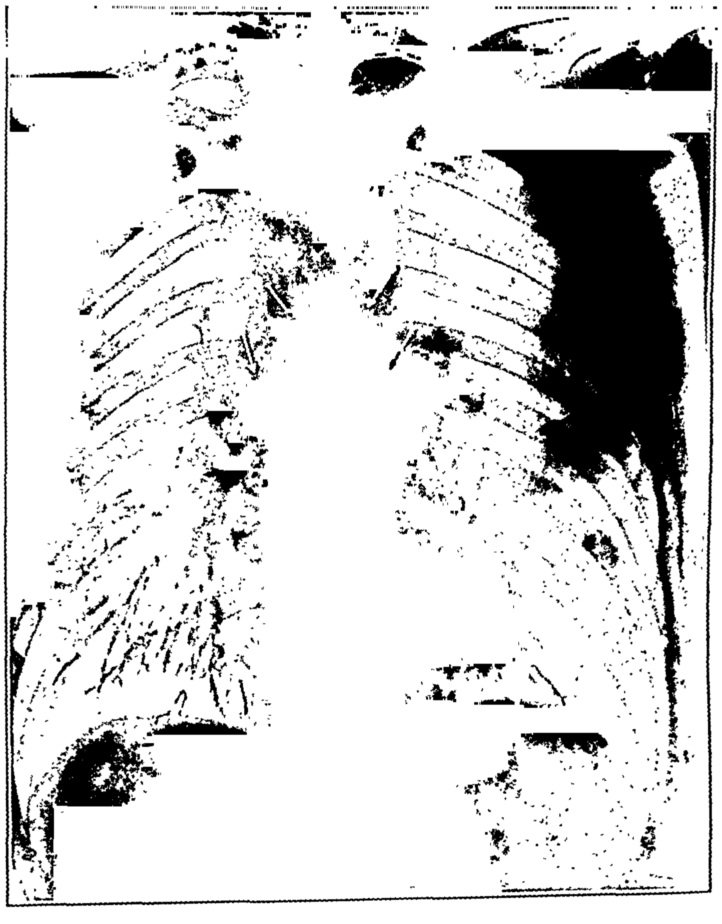
Raymond Cole Beeler, M.D., Indianapolis

On the afternoon of May 7, 1915, I was called to the Indianapolis City Hospital to make a Roentgen examination of the esophagus. The patient had been admitted to the hospital that afternoon and had alarmed the intern, so he called a member of the attending staff.

History.—Mr. H. C. B., aged 58, white, a native of Ireland, married, in the real estate business, with negative family history, had had syphilis forty years ago and myocarditis one year ago; he denied gonorrhea, and there was no history of swallowing escharotics. The present illness began six months ago with difficulty in swallowing. The patient was unable to swallow solids or liquids. He then got better and worse. This continued until one week ago, when he had a hemorrhage of bright red blood which he thought was from the stomach. Up to the time he had this hemorrhage he had gradually become worse and could only with difficulty swallow food and liquids. He was not able to take liquids or drink water since the time he had his hemorrhage. He had violent choking spells when he attempted to eat or drink.

Examination.—The patient was much emaciated, had a distressed look, the breathing was labored, the breath sounds roughened, mostly bronchial, there were some fine moist râles throughout chest, and he had a rasping cough.

Roentgen Findings.—The patient was given a mouthful of barium mixture and told to swallow. The fluoroscope showed the meal to go down the esophagus a short distance and then to go through and fill the bronchi, both lower trunk areas and the bronchioles. These were all seen distinctly as the barium filled them. The patient went into a fit of coughing and expelled a considerable quantity of the meal. He was at once rushed to the roentgenographic room, and stereoscopic roentgenograms of the chest were made. The



Roentgenogram of esophagobronchial fistula.

roentgenogram here shown is one of the pair made at this time. The main trunks and branches are easily made out, but they are not shown in the dilated form as we saw them on the screen. Just above the bifurcation there is made out a mass of barium, probably a dilation at the region of the fistula. There was an area of denser lung shadow in the left middle, and the upper trunks looked to be dilated and thickened. The patient was sent to the ward and fed by rectum. Gastrostomy was performed the third day. The patient stood the operation well. On the seventh day the patient died, apparently from pneumonia. Unfortunately necropsy was not obtained.

Laboratory Report.—Sputum negative. Urine negative. Wassermann positive.

COMMENT

This case is interesting because of the value of the stereoroentgenograms obtained, giving the exact anatomy of the lower bronchial trunk areas in the lung of a living subject. I have not been able to find any similar case reported in literature. The primary cause of this esophagobronchial fistula was probably syphilis.

Hume Mansur Building.

A SPECIMEN OF "AUTO-AMPUTATION" OF THE APPENDIX

J. R. Judd, M.D., Honolulu, H. I.

In "Keen's Surgery," v, 741, J. B. Murphy uses the expression "auto-amputation" of the appendix. The specimen illustrated in the accompanying photograph seems to belong to this classification, and is reproduced as a pathologic curiosity.

The patient from whom the appendix was removed was a man, aged 24, with an indefinite history of appendix inflammation.

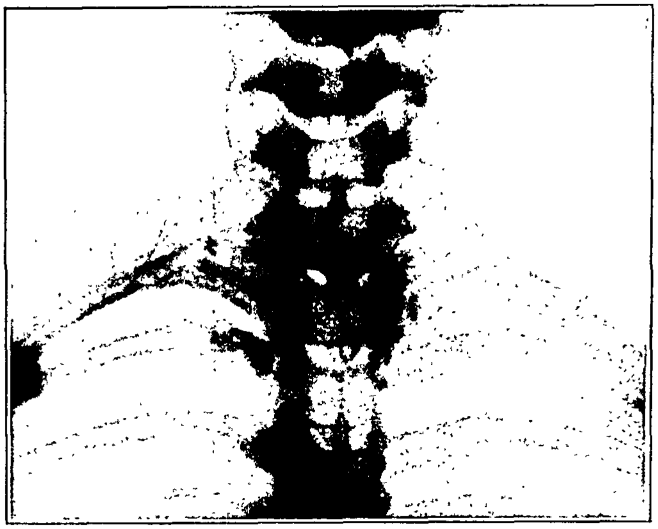
During the course of a kidney operation, the appendix was exposed through the lumbar incision and was brought up into the wound. It was found to be connected with the cecum only by a fine adhesion, so delicate that simply pinching it between the fingers sufficed to separate it. Careful probing failed to disclose any opening into the cecal cavity. The proximal end was also solid. The appendix was 7 cm. in length, not dilated and contained a small amount of mucoid material. It showed the lesions of a chronic interstitial inflammation.

Specimen of "auto-amputation" of the appendix.

CERVICAL RIB AS A CAUSE OF BRACHIAL PAIN

Fred B. Kyger, M.D., Kansas City, Mo.

Cases of cervical rib, while seldom reported, are not uncommon. When the chief complaint is brachial pain, one must always be on guard, as the diagnosis is frequently confused with rheumatism, brachial neuralgia, or neuritis. Miss T., a college student, complained of pain in the right arm and side of the neck. She had been under osteopathic and electric treatment for ten months under a diagnosis of neuritis. The pain had started about one year before in the right arm, and had been growing steadily worse, extending up into the neck and side of the head. She suffered from nervousness and insomnia, and at times the pain was so severe that opiates had to be given.



Cervical rib as cause of brachial pain.

The patient was 21 years of age, and weighed 105 pounds, which she stated was about 10 pounds under her normal weight. Personal and family history were negative. Both parents were living and healthy. Her pulse and temperature were normal. Nothing could be seen on inspection, as there was no especial bulging over the region complained of. She was very tender to palpation above the clavicle and to each side of the cervical vertebra. There was also a firmer resistance to the examining fingers than is normal to that location.

"A pulsating mass above the clavicle means cervical rib nine times out of ten," says Cabot. This characteristic sign, caused by the pulsation of the subclavian artery which usually overrides the rib, was not felt perceptibly in this case. The constant brachial pain with the marked tenderness in that region pointed strongly to cervical rib, and such a diagnosis was given.

The patient returned to her home in Pueblo, and the diagnosis was confirmed by the Roentgen ray, as shown in the accompanying negative taken by Dr. Epler. The patient was subsequently operated on by Dr. Pairs of Pueblo with excellent results.

700 East Thirty-First Street.

Good Food.—What is needed is not so much uniform food laws throughout the country as uniform food definitions for the guidance of those who have in charge the enforcement of the laws. Let us have uniform food definitions that will be accepted by all and then we shall hear very little about the necessity for uniform food laws. If the manufacturers are really sincere and desire to have uniformity other than on a low plane, they can accomplish the most by encouraging the establishment of definitions and standards that will afford protection alike to the consuming public and to the honest manufacturer.—*Bulletin of the North Dakota Agricultural Experiment Station.*

New Instruments and Suggestions

AN AID TO A GOOD FUNCTIONAL RESULT IN ARTHROPLASTIES ON A DIGIT

Paul Gallagher, M.D., El Paso, Texas

In doing my first arthroplasty on a finger, I was impressed with the need of some apparatus which would at the same time give proper exercise to the joint operated on but would be neither cumbersome nor expensive. With this in view, I devised the apparatus shown in the accompanying illustrations.

The arthroplasty was done on the proximal interphalangeal joint of the fourth finger to relieve a traumatic bony ankylosis. As a result of exercise prescribed, two months after the operation, the patient could lift and carry with ease, without assistance and on this joint alone, a weight of 7¾ pounds. Voluntary flexion was present to about 45 degrees and extension to about 170. Any article, such as a pick or ax, could be grasped firmly and securely. In other words, the hand on which the operation was performed is about as good as its normal fellow.

Supervision and encouragement by the surgeon are needed, but I am confident that with some such apparatus fewer fingers need be sacrificed and better surgery will be done.

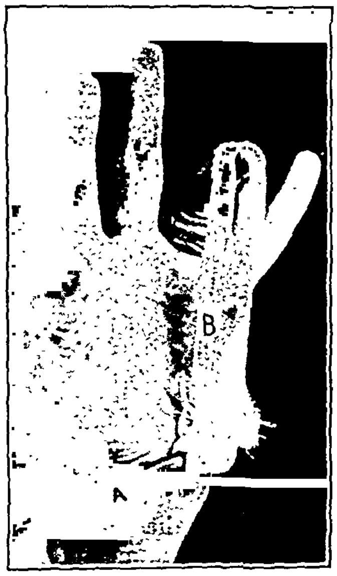


Fig. 1.—Method of obtaining primary passive flexion.

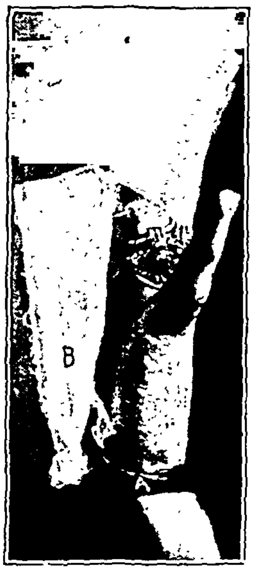


Fig. 2.—Method of obtaining primary passive flexion.

The apparatus consists of a cuff of old rubber glove (*A* in the illustrations), a piece of bandage (*B*) and a thin strip (*C*) about 8 inches long to which are attached by adhesive tape one or more small rubber bands. The number of bands is to be increased from day to day as the need of greater resistance is met.

Figures 1 and 2 illustrate the method of getting primary passive flexion. From day to day the bandage piece is tightened and the cuff slipped up on the arm until flexion is such that the bandage piece will no longer stay on the finger.

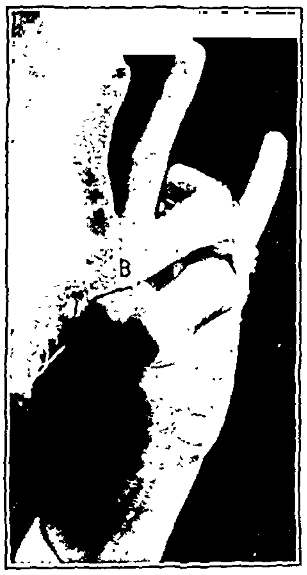


Fig. 3.—The ends of the cuff of the rubber glove are tied to the ends of the bandage.

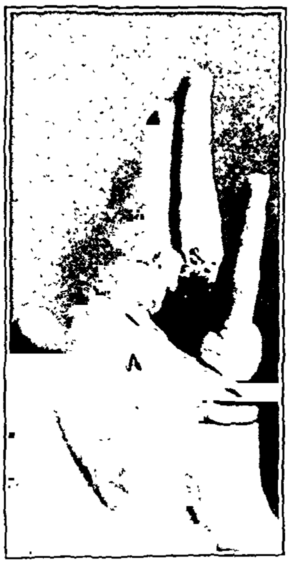


Fig. 4.—Method of obtaining greatest possible passive flexion.

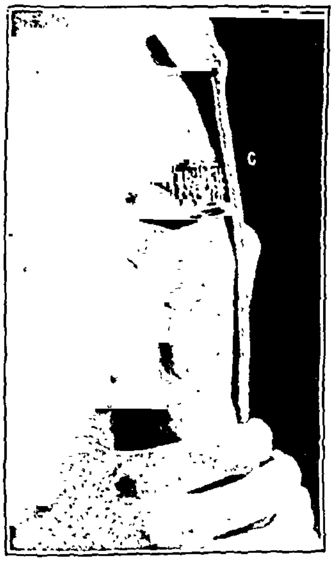


Fig. 5.—Method of obtaining forced flexion and also of developing flexors and extensors.

Figure 3 illustrates the change to be made then and to be persisted in till the piece of bandage, coming around from the back of the hand, can give no greater flexion.

Figure 4 illustrates the method of obtaining the most complete degree of passive flexion possible.

Figure 5 illustrates the method of getting forced flexion and of developing the flexors and extensors too.

I do not believe that the method has been described before, as I was unable to find anything similar when looking up the subject for my own guidance.

AN AUTOMATIC TRANSFUSION APPARATUS*

Morris Kush, M.D.,† New York

In spite of the apparent simplicity of the cannula and syringe methods now used in transfusion, several assistants and more or less elaborate preparations are always needed in order to make the operation go smoothly. With the purpose of eliminating all assistants, and reducing the entire process to as simple a procedure as possible, but still retaining the efficiency of the older methods, the apparatus herewith presented was devised.

The idea of using one syringe in transfusion was first suggested by the Schreiber salvarsan apparatus. Experimentally it was shown that the ball valve was entirely unsuitable for working with blood, owing to the fact that whirring of the valves soon caused clotting. The valve idea, however, was not abandoned, and finally the principle of the sliding valve was utilized in making this machine.

By reference to the accompanying diagram (Fig. 1) the mechanism will readily be understood. Essentially we have a cylinder (*A*) containing a piston (*B*). The cylinder contains two ports (1 and 2), an opening in the base (3), for the escape of air, and a set screw (4). The piston contains a passage way (5) and a milled groove (6). This groove is so built that it receives the set screw, and the latter limits the motion of the piston so that at the end of each excursion the passage way (5, lower end) is exactly opposite either the upper or lower port, and absolutely prevents any rotation. A spring (7) is placed between the piston and the cylinder. This spring is of such strength that it will just support the piston plus an empty 20-c.c. record syringe at the upper port.

The theory of action is as follows: Port 1 is connected with the donor and Port 2 with the recipient. The record syringe is fitted into the passage way (5, upper end). Aspiration on the handle of the syringe raises the piston (*B*) so that the passageway (5, lower end) is opposite Port 1 and permits of the entrance of blood from the donor into the syringe. Depression of the handle of the syringe shifts the piston (*B*) so that the passageway (5, lower end) is opposite to Port 2 and permits of the expulsion of the blood from the syringe into the recipient.

The only criticism which has been made is that clotting will occur because at the end of each cycle the apparatus is not flushed with saline. So far as the valve is concerned, this has been made so accurately that the blood is exposed to a perfectly smooth, continuous passage, and clotting has not occurred. So far as the syringe is concerned, this drawback has been overcome by making use of a method suggested by Dr. C. A. Elsberg. It is well known that to remove clotted blood from a record syringe, all that is necessary is to place it on ice. It was therefore thought possible to *prevent* clotting by keeping the syringe cool. This is done by spraying the barrel with ether from an atomizer during the course of the transfusion. Paraffin-coated catheters with connecting plugs carry the blood between the instrument and the donor and patient. These have been proved capable of withstanding clotting. The ordinary intravenous cannulas of the Kaliski type are used in the veins. The complete apparatus set up and ready for use is shown in Figure 2.

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* From the Surgical Service of the Mount Sinai Hospital.

† Dr. Kush died, May 27, 1915.

The method of procedure is as follows: The entire apparatus is rendered sterile by boiling, and then the tubes are taken from a supply prepared in advance. The cannulas are introduced into the veins, that in the donor pointing peripherally and that in the recipient centrally. The tubes are connected with the valve, and the syringe, half full (10 c.c.) of normal saline solution, is attached to the piston. The solution is expelled through each tube, leaving an air-free circuit. The trocar is removed from the donor's cannula, and the upper tube leading to Port 1 attached. The lower tube from Port 2 is attached to the recipient's cannula. Transfusion then proceeds by manipulating the handle of the syringe in the usual fashion, the barrel being subjected to the ether spray throughout the entire procedure. Any desired amount of blood can then be transfused.

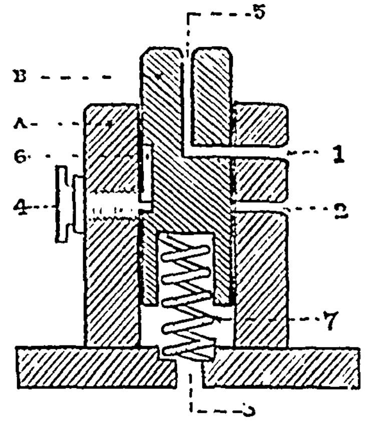

Fig. 1.—Details of automatic transfusion apparatus.

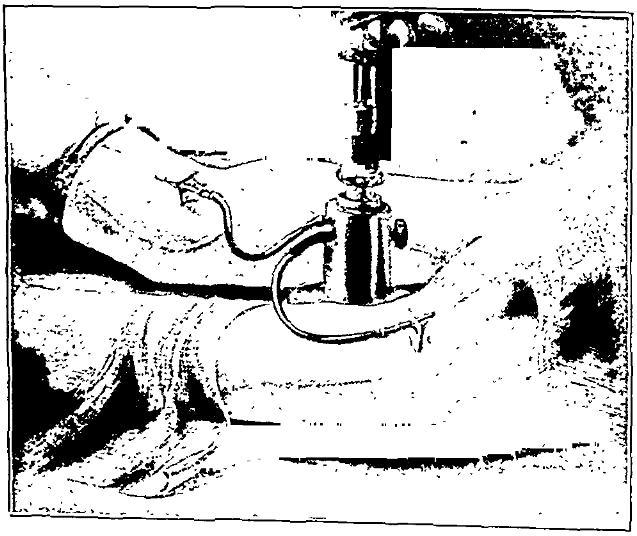

Fig. 2.—Automatic transfusion apparatus ready for use.

Experimentally the device has proved efficient. Several dogs have been transfused, and a number of phlebotomies have been performed. Two successful human transfusions, one of 260. c.c. and one of 160 c.c., have also been performed.[1]

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[1] The apparatus here described is manufactured by Tiemann & Co., New York.

A SIMPLE OPERATING MALLET*

Henry W. Meyerding, M.D., Rochester, Minn.

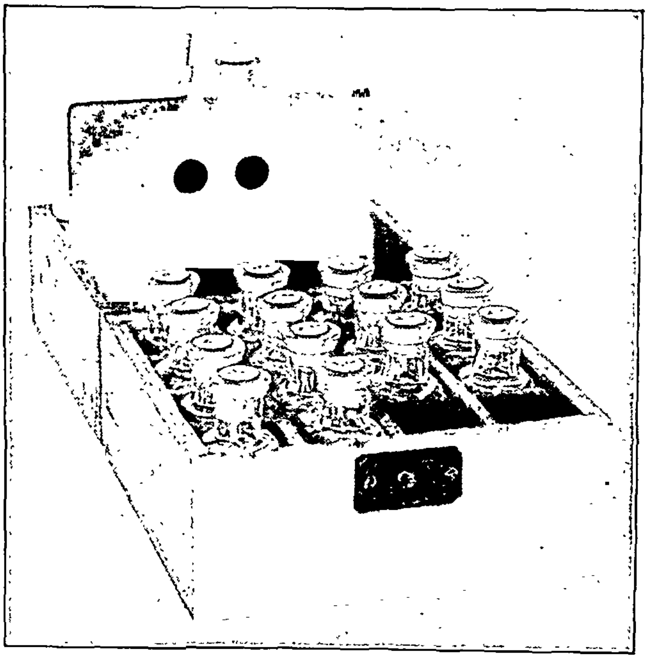
In surgery of the bone it is important to be able to watch the cutting edge of the chisel, and accurately to gage the force of the blow without danger of striking the hand and tearing the glove. The mallet of my design here illustrated has been used with satisfaction for several years in the Mayo Clinic. It is an alloy of zinc, copper and aluminum so composed that the metallic ring of the hammer is avoided, so shaped as to allow a firm grip, and heavy enough to deliver a forceful blow. It measures 8 inches in length, and the diameters are 2½ inches at the head and 1¼ inches at the handle.

Operating mallet.

DEXTROSE COLORIMETER

Philip Atlee Sheaff, M.D., Philadelphia

In The Journal, April 25, 1914, p. 1307, Kleiner describes "A Clinical Method for the Rapid Estimation of the Quantity of Dextrose in Urine." This method has proved of much use to myself and certainly to all others who have availed themselves of Kleiner's suggestions. As a further aid in the technic, the accompanying illustration will make clear a container for the "standard vials" which I have constructed.



Container and screen for standard vials.

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* From the Mayo Clinic.

The solutions vary by gradations of 0.25 per cent., reaching a maximum of 3.5 per cent.

When in use, the solution to be tested is placed in a fixed position on a shelf behind one of the holes shown in the black screen, while one of the "standard vials" is placed alongside of it back of the remaining opening. Back of both vials is fixed a white opaque glass. When not in use, the black screen and the glass are held securely in the top of the closed box, and the solutions are kept in the dark.

The "standard vials," prepared as Kleiner directed, have changed color in my hands since being made up, shortly after his paper was published, and in the "standard vials" now in use I have omitted adding to the filtrate the ammonium hydroxid solution of Kleiner's formula, and have substituted 1 c.c. of commercial formaldehyd solution to 9 c.c. of the filtrate.

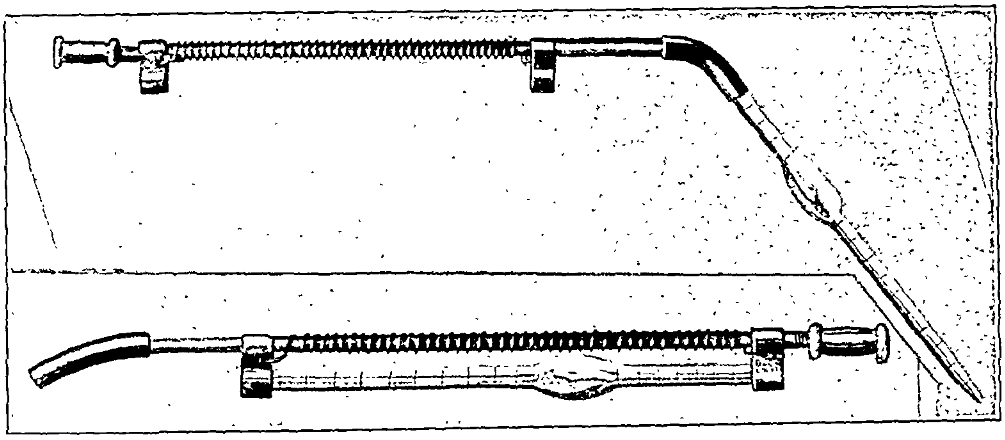
This gives a series of lighter blues, the permanency of which remains to be decided by the test of time.

4008 Baring Street.

A COMBINATION HOLDER AND ASPIRATOR FOR USE WITH THE BLOOD PIPET*

Gordon J. Saxon, M.D., and Louis E. Drummond
Philadelphia

Most clinical laboratory workers have from time to time encountered annoying incidents in connection with the simple procedure of doing a leukocyte or red blood cell count. The rubber tubing has at times been punctured in the process of being used to wrap the ends of the counting pipet, and the contents have escaped in transit from the bedside to the laboratory.



Combination holder and aspirator for use with the blood pipet.

The accompanying illustration shows an implement which is a combination of holder and aspirator for the ordinary blood-counting pipet, and is self-explanatory.

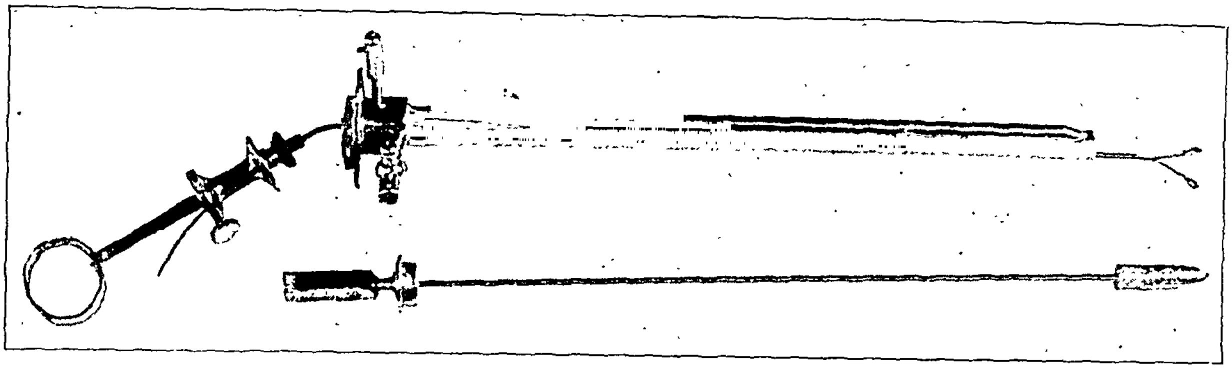
This instrument was made experimentally by Edward P. Dolbey & Co. of Philadelphia and may now be obtained from that firm.

5314 Spruce S

APPARATUS FOR THE REMOVAL OF FOREIGN BODIES FROM THE BLADDER

H. McClure Young, M.D., St. Louis

Any one who has attempted to remove a foreign body from the bladder must have been impressed with the inconvenience attending the use of any beaked cystoscope. The body can be found and grasped with the forceps, but a difficulty immediately arises when we attempt its removal. It is the exception that even a bit of catheter can be withdrawn through the lumen of the cystoscope, and where the greater part of this lumen is already taken up with a lens system, such a procedure becomes practically out of the question. The most rational procedure, therefore, is to remove the cystoscope and forceps together and allow the firmly grasped foreign body to follow after. To such a maneuver, however, the beak of the cystoscope presents a very serious obstacle. The projecting forceps form a continuation of the shaft of the cystoscope, but the beak is set at an angle and will effectually prevent the removal of the cystoscope as long as the forceps are in place. Even when flexible forceps are used, matters are not much better for the reason that the forceps tend to lose their flexibility to a large extent when the jaws are once set.



Apparatus for removal of foreign bodies from the bladder.

The accompanying illustration shows a very simple apparatus designed to overcome these difficulties. It is modeled after an ordinary Koch urethroscope, but is somewhat longer and is provided with a glass window and irrigating cock. It renders possible the dilatation and careful examination of the bladder. The foreign body can then be grasped at the most advantageous point and drawn close up to the mouth of the instrument. If it cannot then be drawn through the lumen, the cystoscope and forceps can be withdrawn together and the foreign body allowed to follow. In this manner it should be possible to remove any object whose passage through the urethra is not in itself an infeasible procedure.

600 Carleton Building.

Rabies.—There is no spontaneous origin of this disease of animals and of man. Every case of rabies is due to infection from some previous case.—*Bulletin State Board of Health of Maine.*

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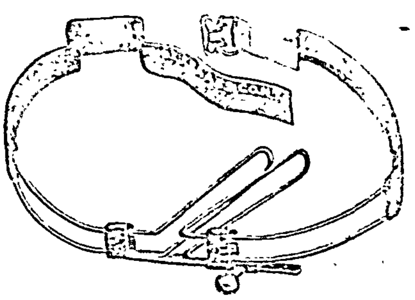
* From the Laboratory for Cancer Research at the American Oncologic Hospital.

A SELF-RETAINING RETRACTOR FOR THE SUBMUCOUS RESECTION OF THE NASAL SEPTUM

Joseph Eastman Sheehan, M.D., New York

The retractor here illustrated consists of two pieces of steel wire connected by a firm band, which is also of steel, held in position by a screw. The outer face piece consists of malleable material so that one can adjust it to the various conformities of the face.

After it has been placed in position, it is held firm by a linen band which is adjusted to the subject's head. The retractor is particularly serviceable when an assistant is not to be had, and more so when the operation is performed in a sitting posture. The danger of injuring the tissues is lessened, and the operating surgeon has always before him a clear view of the operative field.



Self-retaining retractor for submucous resection of nasal septum.

214 West Seventy-First Street.

HERNIA RECORD CARDS

Carleton Dederer, A.B., M.D., Los Angeles
Clinician in Surgery, Los Angeles Department, University of California Medical College

In order to facilitate the history taking and keeping of proper records in hernia cases, I have devised the following form to be printed on the history cards in addition to the usual matter. This card should be used throughout the case in order that the record may be complete. The preferable size is 8½ by 11 inches. This size is suitable for filing in the standard size cabinet.

I. Family history of hernia or hydrocele.
II. Previous hernia history.
III. History of present condition.
    1. Onset.
    2. Cause attributed.
    3. Duration.
    4. Pain.
    5. Spontaneously reducible.
    6. Any general symptoms.
    7. Truss worn.
IV. Examination for hernia, hydrocele and varicocele.
    1. Location and direction.
    2. Appearance of skin.
    3. Shape.
    4. Size.
    5. Character of contents.
    6. Expansile impulse on coughing.
    7. Reducible.
    8. Character of rings.
    9. Normal anatomic structures and position.
    10. Presence of hydrocele, varicocele or inflammation.
V. Treatment.
    1. Truss or
    2. Operation.
        (a) Incision.
        (b) Findings.
        (c) Method of repair.
        (d) Sutures.
        (e) Character of recovery.
VI. Conditions at subsequent examinations.

602 Hollingsworth Building.

Therapeutics

ACUTE DIARRHEA

This simple, frequently occurring indisposition may be due to many causes; but whether the diarrhea is due to a poison from without or to a disturbance from within, it is of primary importance to prevent further irritation and further absorption of toxins by free catharsis. This catharsis should be of our own making: the diarrhea is almost never sufficient, especially if a speedy cure is desired. A diarrhea will often cure itself in time, but the disturbance may last for days, and may leave a subacute irritation of the bowels for several weeks. Therefore, the safest and quickest method of curing a diarrhea is to begin with free therapeutic catharsis.

In a few words, the treatment of acute diarrhea, with or without pain, is:

1. Give castor oil (30 c.c. or 1 fluidounce), on black coffee, on water with a little salt undissolved in the bottom of the glass, or on lemon juice; or calomel, 0.20 gm. (3 grains), and sodium bicarbonate, 1 gm. (15 grains), perhaps taken with Vichy; or a Seidlitz powder, Rochelle salt, 20 gm. (5 drams), or magnesium sulphate, 15 gm. (one-half ounce).

2. Allow no food for from twelve to twenty-four hours.

3. Give a good quantity of hot water, or cool water if hot water is refused. Give hot tea if desired.

4. There should be absolute rest on a couch or bed.

5. Two hours after the purgative has been given, begin the administration of bismuth subcarbonate, 1 gm. (15 grains), and phenyl salicylate (salol), 0.30 gm. (5 grains), combined in one powder, and administer such a dose every two hours for ten doses; or, bismuth subcarbonate, 2 gm., and phenyl salicylate, 0.50 gm., may be given every two hours for five doses.

6. If there are much intestinal gas and colicky pains, 2 teaspoonfuls of paregoric, in hot water, should be given every two hours for two or three doses.

7. If the bowels move too many times from the cathartic, $\frac{1}{10}$ grain of morphin sulphate should be given by the mouth, and repeated in three hours, if needed. Large doses of morphin in such a condition are not needed.

8. If the patient is faint, give $\frac{1}{30}$ grain of strychnin sulphate by the mouth, and, if deemed advisable, one-half teaspoonful of the aromatic spirits of ammonia, repeated if necessary.

9. If the intestinal pains are severe, a hypodermic of one-eighth grain of morphin sulphate, with $\frac{1}{150}$ grain of atropin sulphate, might be given. Rarely in this condition is a larger dose of morphin needed or necessary. It is, of course, better to avoid morphin, if possible.

10. If the patient is already faint from the pain and from profuse watery stools before the treatment is begun, it may be best to postpone the cathartic and give a hypodermic of morphin and atropin as above, and perhaps $\frac{1}{40}$ grain of strychnin sulphate. This hypodermic treatment, combined with rest and a hot water bag to the bowels, and perhaps a cup of hot coffee or tea will soon revive the patient. A laxative may be given later, and generally should be, else irritants will remain in the bowels.

11. In from twelve to twenty-four hours hot malted milk, some cereal gruel, milk toast, or mutton broth may be given, and repeated; later a poached egg, and still later a small piece of steak or a lamb chop may be allowed the patient.

12. Bismuth subcarbonate, 1 gm., may be given three times a day for a few days, if thought best, but not for too long, as bismuth tends to accumulate in the bowels, and may cause a new irritation. Frequently a Blaud pill, two or three times a day, is indicated. The diet should be gradually enlarged, fruit and laxative vegetables being the last to be added to the list. The bowels should be kept warm for some days after an apparent recovery.

N. B.: There is no excuse for giving calomel in divided doses, as it causes irritation of the upper bowel. *One does not want Doses "1," "2" and "3" of calomel to be acting and Dose "10" not even yet started.* Therapeutic catharsis is purging, not dribbling. This foolish one-tenth-grain-dose-of-calomel-every-hour fad should be given a decent burial. If it is claimed that calomel in small doses is a bowel antiseptic, then the answer is, Why cause poisoning to produce antisepsis? Salol in small doses is a harmless antiseptic; small doses of calomel may mercurialize the whole system. The late vomiting after an operation is frequently due to the administration of divided doses of calomel.

HEART TIRE

It is now recognized that any infection can cause weakness and degeneration of the heart muscle. The *Streptococcus rheumaticus* found in rheumatic joints is the cause of such heart injury in rheumatism. That prolonged fever from any cause injures the heart muscle is well known, and cardiac dilatation after severe illness is now more carefully prevented. It is not sufficiently recognized that chronic, slow-going infection can injure the heart. Such infections most frequently occur in the tonsils, in the gums, and in the sinuses around the nose. Tonsillitis, acute or chronic, has been shown to be a menace to the heart. Acute streptococcic tonsillitis is a very frequent disease, and the patient generally, under proper treatment, quickly recovers. However, tonsillitis in a more or less acute form, sometimes so mild as to be almost unnoticed, probably precedes most attacks of acute inflammatory rheumatism. Chronically diseased tonsils may not cause joint pains or acute fever, but they are certainly often the source of blood infection and later of cardiac inflammations. The probability of chronic inflammation and weakening of the heart muscle from such slow-going and continuous infection must be recognized and the source of infection removed.

The determination of the presence of valvular lesions is only a small part of the physical examination of the heart. Also, too readily is the heart eliminated from consideration as the cause of the general disturbance because murmurs are not heard. A careful decision as to the size of the heart will often show that it has become slightly dilated and is a cause of the general symptoms of weakness, leg-weariness, slight dyspnea, epigastric distress, or actual chest pains. In many such cases the patients are treated for gastric disturbance because there are some gastric symptoms. There is no question but that gastric flatulence or hyperacidity or a large meal causing distention of the stomach may increase the cardiac disturbance, and the cardiac disturbance may be attributed entirely to indigestion, but treatment directed toward the stomach, while it may ameliorate some of the symptoms, will not remove the cause of the symptoms.

When an otherwise apparently well individual begins to complain of weariness, perhaps drowsiness in the daytime and sleeplessness at night, or his night's sleep is disturbed, or he has feelings of mental depression, or he says that he "senses" his heart, perhaps for the first time in his life, with or without any edemas of the feet and legs, with or without any pains referred to the heart or heart region, we should presuppose that there is a weakening of the heart muscle until we have, by careful examination, excluded the heart as *being the cause of such disturbance.*

Although constantly repeated in books on the heart and articles on cardiac pain, it still is often forgotten that pain due to cardiac disturbance may be referred to the shoulders, to the upper part of the chest, to the axillae, to the arms, and even to the wrists, to the neck, and up into the head, and into the upper abdomen. It is perhaps generally auricular disturbance that causes pain to ascend, but disturbances of the ventricles can cause pain in the arms and in the region of the stomach. Not infrequently disturbances of the aorta cause pain over the right side of the chest as well as up into the neck. Real heart pains frequently occur without any valvular lesion, and also, as necropsies have shown, without sclerosis of the coronary vessels.

While angina pectoris is a distinct, well-recognized condition, pains in the above-mentioned regions, especially if they occur after exertion or after mental excitement or even after eating (provided that a real gastric excuse has been eliminated), are due to a disturbance of the heart, generally to an overstrained heart muscle or to a slight dilatation. Too much or too little blood in the cavity of the heart may cause distress and pain, or an imperfect circulation through the coronary arteries and the vessels of the heart, impairing its nutrition or causing it to more readily tire, may be the cause of these cardiac pains, distress, or uncomfortableness.

So frequently is the cause of these pains, disturbances and weakness overlooked and the stomach or the intestines treated, or treatment is aimed at neuralgias. rheumatisms or rheumatic conditions, that a careful examination and consideration of the part the heart is playing in the causation of these symptoms should be made.

The treatment required for such a heart, unless there is some complication, as a kidney complication or a too high blood-pressure or arteriosclerosis (and none of these causes necessarily prohibit energetic cardiac treatment) is digitalis. If there is doubt as to the condition of the cardiac arteries, digitalis should be given in small doses. If it causes distinct cardiac pain, it is not indicated and should be stopped. If, on the other hand, improvement occurs, as it generally does, the dose can be regulated by the results. The minimum dose that improves the condition is the proper one. Enough should be given, and not too much. Before deciding that digitalis does not improve the condition (provided it does not cause cardiac pain), the physician should know that a good and efficient preparation of digitalis is being taken. Strychnin will sometimes whip up a tired heart and tide it over periods of depression, but it is a whip and not a cardiac tonic. While overeating, all overexertion, and alcohol should be stopped, and the amount of tobacco should be modified, there is no treatment so successful as mental and physical rest and a change of climate and scene with pure air.

Many individuals with these symptoms of cardiac tire think that they are house-tired, shop-tired, or office-tired, and undertake physical exercise, such as walking, climbing, tennis playing or golf playing, to their injury. Such tired hearts are not ready yet for added physical exercise; they should be rested first.

The treatment of this cardiac tire is not complete until the tonsils, gums, teeth and the nose and its accessory sinuses are in good condition. Various other sources of chronic poisoning from chronic infection should of course be eliminated, whether an uncured gonorrhea, prostatitis, some chronic inflammation of the female pelvic organs, or a chronic appendicitis.

Longcope[1] has recently shown that repeated, and even at times one protein poisoning can cause degeneration of the heart muscle in rabbits. Hence it is quite possible that repeated absorption of protein poisons from the intestines may injure the heart muscle as well as the kidney structure; consequently, in heart weakness, besides removing all evident sources of infection, we should give such food and cause such intestinal activity as to preclude the absorption of protein poison from the bowels.

CHRONIC APPENDICITIS?

Many patients with a condition diagnosed as chronic appendicitis, when operated on, are not relieved of their pain, constipation, and general abdominal discomfort. In many cases, with what seems to be positive evidence, both by history and physical signs, of a subacute or chronic appendicitis, the appendix is found normal. In many other cases, the diagnosis is found correct, and relief follows operative removal. The fact still remains, however, that a certain large percentage of appendectomized patients disappoint their physicians by continuing to have pain, which we helplessly attribute to "operative adhesions" and which we "think" will gradually subside.

The diagnosis of chronic appendicitis, like that of many other conditions, should be made only by exclusion. Gallbladder disturbance, prolapsed right kidney, and ovarian inflammation must all be excluded, if possible. Adhesions and bands in the appendix region may perhaps be included in a diagnosis of chronic appendicitis, although a better phrase would be "chronic disturbance in the appendix region." An insufficient ileocecal valve, or an enlarged and movable cecum, as first pointed out by Blake[2] may be the cause of such symptoms as constipation, gas, and distention.

The following should be the rule of procedure before operation is done for chronic pain and disturbance in the right lower abdomen:

1. Careful physical examination should be made to exclude if possible gallbladder, kidney, ovarian, or pelvic causes of the right abdominal disturbance.
2. Carefully studied bismuth pictures of the intestines should be taken.

It should be recognized also that many times no conclusion as to the exact conditions in this region can be made until the abdomen is opened. At the operation the gallbladder, the right kidney, the right ovary and tube should all be carefully studied; bands and adhesions should be sought for and broken up, if possible. Also, it may be wise to operate on a cecum for ileocecal valve insufficiency, or for an enlarged pendant cecum. At least these conditions cause symptoms, and many times proper surgical treatment at the time of the primary operation obviates the necessity of a secondary operation.

The main point of this article is that it is often not sufficient, with chronic pain in the lower right abdomen, to remove the appendix, however abnormal it may be found. Especially if the appendix is found normal (though of course it should be removed), the other conditions that cause abdominal disturbance should be investigated and surgically treated.

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[1] Longcope, W. T.: The Effect of Repeated Injections of Foreign Protein on the Heart Muscle, Arch. Int. Med., June, 1915, p. 1079.
[2] Blake, Joseph A.: Ann. Surg., May, 1912.

New and Nonofficial Remedies

The following additional article has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Its acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

MERCURIALIZED SERUM, Mulford.—A solution of mercuric chloride in normal horse serum, diluted with physiologic sodium chloride solution.

Actions and Uses.—Mercurialized serum, Mulford, is proposed for the treatment of syphilis, particularly the cerebrospinal type. It is an attempt to produce a preparation which, while therapeutically active, possesses comparatively low toxicity and slight local irritative action, and which consequently is adapted to intraspinal use and can be used intravenously without danger of phlebitis.

Dosage.—Intraspinally, 30 Cc. of a solution, the dose containing the equivalent of 0.0013 Gm. (1/50 grain) mercuric chloride, increased, when tolerance is established, to 30 Cc. of a stronger solution, the dose containing the equivalent of 0.0026 Gm. (1/25 grain) mercuric chloride. Intravenously, 2 Cc. of a solution, the dose containing the equivalent of 0.0055 Gm. (1/12 grain) mercuric chloride, increased, if indicated, to 8 Cc. of the same solution, the dose containing the equivalent of 0.022 Gm. (1/3 grain) mercuric chloride.

The H. K. Mulford Company, Philadelphia, Pa. No. U. S. patents or trade-marks.

Mercurialized Serum, Mulford, No. 1.—Each package contains one 30 Cc. ampule, containing the equivalent of 1.3 mg. (1/50 grain) mercuric chloride, with rubber tubing and an intraspinal needle.

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Mercurialized Serum, Mulford, No. 3.—Each package contains ten 30 Cc. ampules, each containing the equivalent of 1.3 mg. (1/50 grain) mercuric chloride, with rubber tubing and an intraspinal needle.

Mercurialized Serum, Mulford, No. 4.—Each package contains ten 30 Cc. ampules, each representing 2.6 mg. (1/25 grain) of mercuric chloride, with rubber tubing and an intraspinal needle.

Mercurialized Serum, Mulford, No. 5.—Each package contains 8 Cc. mercurialized serum, Mulford, containing the equivalent of 22 mg. (1/3 grain) of mercuric chloride in a syringe graduated in fourths, with needle.

Mercurialized Serum, Mulford, No. 6.—Each package contains ten syringes graduated in fourths, each containing 8 Cc. liquid which represents 22 mg. (1/3 grain) of mercuric chloride.

Mercurialized serum, Mulford, is prepared by adding to a solution of mercuric chloride sufficient normal horse serum to dissolve the precipitate first formed and then diluting to the desired volume with physiologic sodium chloride solution.

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SATURDAY, OCTOBER 2, 1915

OBJECTIONABLE FEATURES OF GARBAGE DISPOSAL

In almost every large community there are plants for the disposal of garbage and offal; they represent a feature of the conservation processes which economic conditions have made necessary. The work includes the recovery of grease and the manufacture of tankage, a product at first used solely as a fertilizer but now beginning to enter into the feed of the domestic animals. The processes are not infrequently attended with the production of odors and sometimes of dust of a disagreeable nature, leading to complaints and raising questions of public hygiene and comfort. Where waste-disposal engineers are not available, the expert advice of physicians is drawn on. Testimony is sought as to the alleged nocuous or innocuous character of the subject of complaint; but, owing to the meager character of the information on this topic possessed by most of us, the outcome of the testimony is often quite contradictory.

Some of the offensive odors from the fat rendering or reduction plants originate from the raw "green" garbage. These odors, as well as certain others arising in the manipulations, are of a rather local nature. Other odors from some of the treating methods may be far more objectionable in that they are capable of causing discomfort several miles away. How to avoid or counteract these difficulties in the economic handling of large quantities of very low grade materials, particularly in the neighborhood of such places as Chicago and New York, is a problem that has taxed the ingenuity of many experts. The Central Testing Laboratory of New York City has lately made a chemical study of the nature of the odors and dust in garbage reduction plants and also the present and possible means of treating them.[1] In the reduction works located near to inhabited sections, garbage must be transported in closed scows or cars; the handling of the garbage, both raw and in process, and other obnoxious treatments should properly be carried out inside of buildings in which the odors can be properly disposed of. In many cases the ventilating air can be drawn through "scrubbers," which are devices for washing the gases with water to dissolve or retain some of the objectionable constituents. Afterward this partly purified air can be passed through devices for scenting it with wood-tar oils or coal-tar. Systems of this nature are successfully used in treating packing-house air. For many persons the sense of smell seems to be the guardian of health, so that the "covering up" or substitution or confusion of odors is quite as comforting as the more rational elimination or destruction of the offending respiratory invader.

In the manufacture of tankage, garbage is necessarily heated in large containers for several hours, usually with the aid of live steam. It is the vent gases from these "digesters" that have odor of more than local importance. According to Mahr and Kraft,[1] the mechanically carried over substances removed by the condensers are principally mineral matter, fats and fatty acids. The volatile substances in the vent gases which are condensable or absorbable in water include alcohol, acetic acid, carbon dioxid, essential oils and sulphur compounds. Of these constituents, the latter two are important from the standpoint of odor. The extremely nauseating odor of the uncondensable vent gases appears to be due to sulphur compounds and other nonsulphur-containing substances, possibly essential oils.

In some plants, very high temperatures are used for destroying the odors and uncondensable vent gases from garbage digesters. Thus they are sometimes sent through the fires required in the devices for drying the tankage. A method of deodorizing packing-house air by means of sulphur dioxid has been said to give good results. According to Mahr and Kraft, it is possible that the sulphur dioxid, formed by heating the vent gases, could be reconducted to the jet condensers, and in this way a deodorization of the condenser water brought about.

However efficient the elimination of the nauseous products of the garbage reduction processes themselves may be, they do not exclude the necessity of maintaining in a cleanly way all plants where garbage is collected, stored and treated. Winds passing over a filthy plant may take up considerable residual odor, even when no garbage is present or in process. The New York experts emphasize the fact that to eliminate this source of trouble, garbage plants should be of the most sanitary construction to permit washing and prevent material lodging in crevices. The cement of concrete floors is readily attacked by the "stick liquor" and garbage, and wooden floors are sometimes put down. As may be easily understood, these soon become of a very objectionable nature and cannot be well cleaned. A concrete floor with a frequently renewed tar coat or one of asphalt would be a great improvement on the wood.

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[1] Mahr, H. W., and Kraft, A. C.: Investigations on the Nature and Elimination of Odors and Dust from a Garbage Reduction Plant, Jour. Indust. and Engin. Chem., 1 15, vii, 778.

To the layman it must seem strange that until recently so little serious study has been given to problems which involve inevitable sources of discontent and occasions for remonstrance in our larger cities. As in the case of the smoke nuisance, the authorities have been content to obey the law of inertia until popular demand has precipitated an immediate and hasty examination of phenomena which have long demanded more careful and detailed scientific investigation. We have become accustomed to a conventional shabby treatment of applied science as a factor in community life and economic progress, but this sometimes ceases to be a joke.

THEORY AND PRACTICE

In his presidential address before the British Association for the Advancement of Science on the subject, "The Common Aims of Science and Humanity," Prof. Arthur Schuster[1] discusses the age-old ever-recurring problem of the comparative value of theory and practice for accomplishment in life. Much is said in our time of the difference between the academic scientist and the man of affairs. Professor Schuster speaks of England, but some of his remarks apply very aptly to conditions in America; for instance, he says that "sometimes we are recommended to hand over the affairs of the nation to men of business; sometimes we are told that salvation can only be found in scientific methods." An analysis of these type characterizations does not reveal the opposition that is often supposed to exist between them. Schuster justly insists that "every method that leads to a correct result must be called a scientific method," and that therefore when "one man calls for the conduct of affairs on 'business lines' and the other clamors for scientific methods, they either want the same thing or they talk nonsense."

This discussion is of particular interest to physicians because of the unending difference of opinion as to the relative value of theory and practice in medical education. In this, as in everything else, truth lies not at one of the extremes, but between them. Schuster says:

"The most fatal distinction that can be made is the one which brings men of theory into opposition to men of practice, without regard to the obvious truth that nothing of value is ever done which does not involve both theory and practice; while theory is sometimes overbearing and irritating, there are among those who jeer at it some to whom Disraeli's definition applies: 'the practical man is the man who practices the errors of his forefathers.' With refined cruelty Nemesis infects us with the disease most nearly akin to that which it pleases us to detect in others. It is the most dogmatic of dogmatics who tirades against dogma, and only the most hopeless of theorists can declare that a thing may be right in theory and wrong in practice."

"Common sense" is another stereotyped expression which Schuster is inclined to challenge. Huxley is often quoted as declaring that science is organized common sense, but Schuster cannot find a definition of common sense that fits the phrase. "Sometimes the word is used as if it were identical with *uncommon* sense, sometimes as if it were the same thing as common *nonsense*." He suggests that in its best aspect it is that faculty which recognizes that the obvious solution of a problem is frequently the right one. It must not be forgotten, however, that obvious explanations often are quite wrong and that any scientific reason to the contrary, when supported by good observations, makes the common-sense explanation of no value. This is true even with regard to things as to which there is almost universal agreement among mankind. The obviousness of the sun going round the earth has no weight when it comes to the scientific demonstration that the earth goes round the sun. The practical man, proud of his common sense, comes around to the theorist's view in this matter when he knows enough.

All advance in science comes from a combination of theory and practice, or rather, from a successful application of theory to practice. In this way what seemed to one generation the climax of theory becomes to the next generation only a very obvious practical scientific advance. There is no real opposition between correct theory and correct practice. Practice cannot dispense with theory, and theory is sure to become unreal and fallacious when not reduced to practice in some way. The greatest discoverers — Galileo, Pasteur, Kelvin, Lister and practically all the great discoverers in medicine — are always theorists and men of action as well. The opposition between theory and practice is a myth, fostered largely by the bungling theorist who is unable to put his theories into practice, and by the bungling "practical man" who is unable to express the theory which underlies his practice.

THE PANCREAS, AND SUGAR IN THE BLOOD

In recent discussions of the causes of diabetes, two theories have gained prominence. The Journal has referred to them[1] as the over-production and non-utilization theories, respectively, using these terms in relation to the sugar factor, which naturally forms the essential theme for consideration in this disease. Whether or not it is agreed that the disturbance in the carbohydrate metabolism appears to represent a loss of power of oxidizing glucose, there is one fundamental fact about which no difference of opinion can exist.

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[1] Schuster, A.: Science, Sept. 24, 1915, p. 397.

[1] The Metabolism in Experimental Diabetes, editorial, The Journal A. M. A., Sept. 4, 1915, p. 878.

In diabetes, the sugar content of the blood is higher than normal and is variable in amount, and, when it is sufficiently high, the glucose escapes through the kidneys into the urine. Hyperglycemia precedes the glycosuria.

At the department of physiology and pharmacology of the Rockefeller Institute for Medical Research, Kleiner and Meltzer[2] have made a series of experimental observations that throw a somewhat different light on the subject of diabetes. Apparently certain striking differences in behavior occur between normal animals and those rendered diabetic by excision of the pancreas, a procedure which is familiarly known to result in glycosuria. Under physiologic conditions, sugar is liberated into the circulation from the liver, where it is stored as glycogen. If this function is imitated in an indirect way by the infusion of sugar solution directly into the circulation, the carbohydrate speedily finds its way out of the blood in some manner or other. Even a very large surplus of glucose will disappear from the blood stream under these circumstances. When the amount is large, part of the sugar is excreted through the kidneys, and part finds its way into the tissues. Before long the glucose content of the blood reaches nearly the same level which it had before the injection. Even in the absence of the kidney function, in nephrectomized animals, for example, the glucose returns to the previous level in about the same length of time, affording a striking example of the ability and readiness of the circulation of a normal animal to rid itself of a large surplus of sugar.

Quite different is the outcome of the introduction of sugar into individuals from which the pancreas has been removed. In such cases the blood is strongly hyperglycemic even before the sugar infusions. Kleiner and Meltzer found here, in contrast with what has just been recited, that the glucose content of the blood is not reduced promptly after the introduction of sugar. Apparently the removal of the pancreas interfered with the power of the circulation to rid itself readily of a surplus of glucose. The possible ability of the liver to provide the circulation with a greater supply of glucose in the absence of the pancreas can certainly be no important factor in these results. The investigators believe these new experiments to show that, in the presence of the pancreas, the circulation rids itself easily of intravenously introduced glucose, but that it is unable to do so satisfactorily in the absence of the pancreas. On the basis of these facts, Kleiner and Meltzer ask whether it is not plausible to assume, further, that the pancreas exerts exactly the same influence when the glucose in the circulation is being supplied in some other manner than by a buret into a vein — by the liver, for instance — through its connections with the circulation. In other words, do not these experiments make the assumption plausible that pancreatic hyperglycemia is due to the fact that, in the absence of the pancreas, the circulation is unable to dispose properly of the dextrose which it receives in normal amounts from the liver?

This is not all. The actual participation of the pancreas in the normal regulatory function is further suggested by the fact that the ability of the circulatory apparatus of animals to get rid of a surplus of glucose injected intravenously — a function which is impaired in the absence of the pancreas — can be temporarily restored by an intravenous injection of a pancreatic emulsion. Furthermore, such a procedure is also capable of reducing the hyperglycemia due only to depancreatization to a normal level of the sugar content of the blood.

It is too early to speculate extensively on the nature of the factors here involved. These interesting observations add one more link to the chain of evidence regarding the conspicuous performance of the pancreas in the disposal of sugar in the organism. Again, it becomes obvious that such effects of the pancreas must be of a chemical rather than a nervous character.

THE SURGICAL TREATMENT OF NEPHRITIS

Since Reginald Harrison, in 1896, reported an unexpected improvement in the symptoms of acute and subacute nephritis after incision of the renal capsule, operation has been performed with apparent success in many cases of nephritis of various types. Ruge,[1] who carefully reviews the literature, points out that the examination of kidneys exposed in these operations, as well as recent experimental work, in some ways have revolutionized our ideas about nephritis. Thus, it has been established that albuminuria, even when accompanied by casts and red blood cells, does not necessarily indicate nephritis as the term is understood usually, for purely mechanical factors may so interfere with the renal filter as to produce the urinary picture of nephritis. Conversely, in chronic nephritis as determined by microscopic examination, all symptoms may be absent, or a severe hemorrhage or colic may be the first and indeed the only sign. Of especial interest are observations to the effect that acute infection may develop in one kidney, or part of one kidney, and later be followed with injury to the healthy tissue by so-called nephrotoxic substances. The results of experiments indicate that increased blood pressure is not produced by mechanical changes in the renal vessels, but is probably due to resorption of degenerating renal epithelium.

In acute nephritis an explanation of the good results of capsular incision and capsular removal is not difficult, since pressure on swollen and inflamed tissue is relieved. After injecting diuretic solutions in cats Gawrilow obtained from two to four times as much blood in the renal vein, and from two to four times as much urine was collectible from the decapsulated as from the untouched kidney. The pressure of the capsule seems to establish a vicious cycle by increasing the circulating disturbance and thus causing even greater injury to the epithelium. In experimental toxic nephritis in dogs, Onorato reports recovery in five out of eight cases in which decapsulation was performed, while all the animals not operated on died. If these observations are in harmony with the conditions in man, certainly surgical treatment is indicated in all acute conditions in which conservative treatment does not succeed. In eclampsia, the variable severity of symptoms renders difficult the comparison of statistics. The general attitude of the observers now seems to favor decapsulation in severe cases. Sippel states that the operation is indicated when threatening symptoms of severe nephritis remain after the uterus has been emptied. After ureteral catheterization the kidney which shows greater injury should be treated. If there is no difference, both may be decapsulated if the condition of the patient permits. The operative mortality is relatively slight. Convulsions, it is said, usually stop at once and coma rapidly disappears.

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[2] Kleiner, I. S., and Meltzer, S. J.: Retention in the Circulation of Dextrose in Normal and Depancreatinized Animals, and the Effect of an Intravenous Injection of an Emulsion of Pancreas upon this Retention, Proc. Nat. Acad. Sc., 1915, i, 338.

[1] Ruge, E.: Ueber den derzeitigen Stand einiger Nephritis-Fragen und der Nephritis-Chirurgie, Ergeb. d. Chir. u. Orthop., 1913, vi, 503.

In nephritis following acute infections surgical treatment has not come into vogue, probably because surgeons do not see many such cases. Operation is held to be indicated when anuria or uremia point toward an increase in intrarenal pressure. Pousson, in 1904, reported operations in 37 postscarlatinal cases, with 6 deaths. Since then nearly twice as many cases at least have been reported. Of course, nephrotomy in such cases is indicated when the presence of an abscess is suspected. When bacterial emboli cause diffuse infiltration or abscess formation, nephrotomy, always preceded by ureteral catheterization, is the operation of choice if the condition of the kidney does not demand its removal. Kümmell has reported 28 cases, 17 nephrectomies and 11 nephrotomies with only 3 deaths. Tenderness and muscular defense in these forms of nephritis are important signs.

The good effects of decapsulation in chronic nephritis are harder to explain. Experiments indicate that in certain cases collateral circulation may be established. That the consequent maintenance of function is at best a temporary one, may explain the conflicting reports. Clinically, improvement and recovery have been noted in many instances. Guiteras, in 1904, reported decapsulation in 120 cases of chronic nephritis, with clinical recovery in 16 per cent., improvement in 40 per cent., and death in 23 per cent. In Edebohls' 102 cases, reported in 1909, 49 patients died within five years, 33 were permanently cured, 11 improved, and 6 remained uninfluenced by operation. Kümmell, in 1912, reported 26 cases with definite improvement in 14. In general, it would seem that when long internal treatment shows slight or no improvement, or if the condition grows worse, decapsulation might be tried. Anuria and uremia in chronic nephritis, in the opinion of most authors, are favorably influenced by surgical treatment. Thus, Uteau found that, in 300 cases of anuria under various methods of treatment, 75 per cent. of the patients treated surgically before the fourth day and 58 per cent. so treated between the fourth and sixth day recovered. Decapsulation, usually unilateral, seems to be the operation of choice.

In renal hemorrhage, considered most commonly as caused by chronic nephritis, differential diagnosis is difficult. If conservative measures fail operation is indicated. While there is no agreement as to the operation of choice, nephrotomy is preferred, according to Ruge, when the diagnosis is in doubt. Kümmell has reported 16 cases, 4 nephrectomies, and 8 nephrotomies, and 4 decapsulations, with one death.

In the nephralgia of chronic nephritis, often combined with hemorrhage, other signs may be absent. The colic which is not at all characteristic is probably due to capsular compression of a swollen kidney. The diagnosis is usually established by exposure and section of the kidney with examination of the pelvis. Kümmel has reported 13 cases, 4 decapsulations and 9 nephrotomies, in 12 of which the patients afterward remained free from pain as long as observed.

From what has been said it appears that it is justifiable to center interest on this comparatively new field of surgery because it awakens hope of benefiting conditions which respond but little to internal treatment, and because of the light it throws on the pathology of nephritis.

DEFENDING THE GREAT AMERICAN FRAUD

Most of the fellows and members of the American Medical Association are aware of the fact that the Chattanooga Medicine Company and its chief owner, John A. Patten, manufacturers of Wine of Cardui, have sued (1) the American Medical Association and the editor of The Journal for $300,000, (2) Dr. Oscar Dowling, President of the Louisiana State Board of Health, for $25,000 and (3) *Harper's Weekly* for $200,000. Comparatively few realize, however, that the "patent medicine" interests of the country are spending money lavishly in a desperate effort to win a suit on whose outcome, they consider, depends the very life of the nostrum business. We have, at different times, given our readers an insight into some of the methods pursued in this case, especially in connection with the employment of detectives for the apparent purpose of manufacturing "evidence."

To refresh the memory it is but necessary to refer to the case of the Limestone County (Ala.) Medical Society.[1] There it was strongly intimated that not only the society, but also the individual members would be sued if the resolutions passed by the society condemning the methods of the Chattanooga Medicine Company were not rescinded. The episode of Detective Smith is also in point. A man who posed as a journalist called on Mr. Samuel Hopkins Adams in New York and on Dr. Bolduan of the New York Health Department. He professed to be seeking information for an article he wished to write to show how prohibition in the South was driving the people of that territory to use alcoholic "patent medicines." Smith came to Chicago and, giving as his references the names of Mr. Adams and Dr. Bolduan, attempted to get an interview with the member of The Journal staff who has charge of the Propaganda Department. Failing to get the interview he left town, stating that he could be reached by mail in Indianapolis, but actually going to Chattanooga. Then there was Barron, who posed as a "western business man" stopping in Chattanooga. It was he who assiduously cultivated the friendship and hospitality—later betraying them—of the Chattanooga pastor who lost his pastorate after he had dared lift his voice against the iniquity of the Wine of Cardui traffic.

But this by the way. The object of this comment is to call attention to an interesting article in the current (October 2) issue of *Harper's Weekly*, wherein are described the activities of some of the horde of detectives employed in this case. We suggest that physicians who have the interest of the public health and the medical profession at heart buy a copy of this week's *Harper's*. Under the title, "Patten in Pink Whiskers," the story gives in detail the experience of "Operative No. 48," a detective who threw up his job in disgust at the work he was expected to do for the "patent medicine" interests. How the private papers of the secretary of the Limestone County Medical Society were ransacked; how the minutes of that society were purloined and copied; how the Chattanooga pastor was dogged by detectives and private conversations taken down in shorthand by stenographers hidden from view—these are some of the things described by "Operative No. 48" in the *Harper* article. Read in connection with The Journal's articles on the Wine of Cardui case,[1] it gives a very good idea of the methods to which the "patent medicine" interests will descend in their attempt to protect their noisome brood and to discredit the medical profession.

Those who in the past have built up huge fortunes by swindling the sick, sense the downfall of their business that is bound to follow the publicity that has been given it by the American Medical Association and other agencies. Really the Wine of Cardui cases are not simply "Chattanooga Medicine Company *vs.* The American Medical Association, Oscar Dowling and *Harper's Weekly;* they are "The Great American Fraud *vs.* The Medical Profession and the Public."

Current Comment

NEUTRALITY REGULATION DURING PREGNANCY

In a recent discussion of the subject of acidosis,[1] attention was called to the seemingly paradoxical statement that, despite the undue production of acid substances which goes on in certain disturbances of metabolism, of which diabetes is a classic example, the regulatory power of the organism nevertheless prevents any marked changes in the reaction of the circulating blood. Pregnancy furnishes a more physiologic instance of an acid-forming tendency provided by nature. It is attended by symptoms which are currently regarded as indicative of a degree of acidosis; and inasmuch as this ordinarily falls within the range of what may be regarded as a fairly normal function, the acidosis of pregnancy should afford an excellent opportunity to study the relative participation of the physiologic regulatory devices for preserving neutrality in the organism. These include, as we have pointed out before, an increased production of ammonia from protein products to neutralize the acid products, a decreased concentration of carbon dioxid in the blood (and alveolar air) owing to its displacement through the agency of the augmented acid; and an increased elimination of acid radicals by way of the kidneys. Which, if any, of these factors are brought into play under the conditions of pregnancy? Hasselbalch and Gammeltoft[2] of Copenhagen have carefully investigated this question by making comparisons of the various functions concerned in the same persons during and after pregnancy. It was found that the hydrogen ion concentration of the blood of gravid females is not different from that of other nongravid individuals of either sex. Whatever unusual production of acid may arise as the outcome of the pregnancy is evidently promptly taken care of by the regulatory mechanism. This is in part accomplished by the ammonia-producing activities, for the percentage output of ammonia in the urine is somewhat higher in the pregnancy period. More striking, however, is the decrease in the tension of carbon dioxid in the blood, which seems to serve in larger measure to prevent any rise in the true acidity. The increased genesis of acid substances, whatever they may be and however produced, is compensated by the expulsion of carbonic acid gas through the lungs and a resulting lower tension thereof in the blood. A fixed acid replaces one more readily expelled. Altered respiration plays a part in the process. The stability or constancy of the reaction of the blood under conditions such as disease and pregnancy, which represent pronounced departures from the usual routine of acid formation in the body, is one of the most interesting facts of physiology. Highly sensitive tissues like the nervous structures are thus spared the irritation of even slight alterations of hydrogen ion concentration. Failure or insufficiency of the regulation brings severe manifestations of disease. This seems to be the case, according to a few experiences of the Danish investigators, in that puzzling condition described as eclampsia.

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[1] This matter and other articles on the Wine of Cardui case are reprinted in the pamphlet "Female-Weakness Cures and Allied Frauds," price 10 cents, published by the American Medical Association.

[1] Acidosis and the Reaction of the Blood, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1114.

[2] Hasselbalch, K. A., and Gammeltoft, S. A.: Die Neutralitätsregulation des graviden Organismus, Biochem. Ztschr., 1915, lxviii, 206.

THE SURVIVAL OF BACILLUS BULGARICUS IN THE ALIMENTARY TRACT

One aim of the procedure which has somewhat tauntingly been termed the sour-milk therapy is to establish the predominance of organisms of the *Bacillus bulgaricus* type in those parts of the intestine in which the products of their activity will repress undesirable putrefactive changes in the alimentary contents. The group of organisms which includes the one specially recommended and found in fermented milk is distinguished by the ability of its members to grow in mediums containing considerable amounts of acid. In a widely quoted research, Herter and Kendall[1] found that by feeding a monkey for two weeks exclusively on milk fermented with *Bacillus bulgaricus* (but containing also some yeasts) it was possible to maintain an acid reaction throughout the digestive tract. The acid reaction was more pronounced above the ileocecal region than at this region or below it. The acidity decreased progressively from the ileocecal region to the anus. Lactic acid was detectable at every point in the digestive tract that was tested, the reaction growing less marked below the ileocecal region. Exclusive feeding for two weeks with milk fermented with *Bacillus bulgaricus* failed to establish the predominance of this organism in the ileocecal region or in the large intestine. In the latter situation, the number of bacilli of this type was relatively small and decreased toward the anus. Thus, in the regions characterized by most active putrefaction, the lactic acid bacilli failed to establish themselves in relatively large numbers. The experimental data in this field deserve considerable attention because of the widespread employment of these bacterial cultures along with the diet in American homes, either with or without the sanction of physicians. The latest of numerous contributions, by Dr. Alfred H. Raehe[2] of the Cornell University Medical College in New York City, brings added evidence that the *Bacillus bulgaricus* cannot become adapted to the lower human intestine. It is still quite possible that such an organism might be able to adjust itself to the conditions prevailing in the duodenum and jejunum, but be unable to survive in the lower intestine, and thus be absent from the stools. A limited survival in the upper intestine of monkeys is apparently possible. This, however, does not adequately fulfil the foremost purpose of those who recommend its use to check the growth of putrefactive bacteria.

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[1] Herter, C. A., and Kendall, A. I.: An Observation on the Fate of B. Bulgaricus (in Bacillac) in the Digestive Tract of a Monkey, Jour. Biol. Chem., 1908, v. 293.

[2] Raehe, A. H.: A Study of the So-called Implantation of the Bacillus Bulgaricus; Jour. Infect. Dis., 1915, xvi, 210.

THE COLLAPSE IN DIPHTHERIA INTOXICATION

Recent investigations in which exact methods of observation have replaced the clinical guesses of an earlier period make it evident that the haphazard explanations of the circulatory failure and collapse so frequently encountered in diphtheria are not tenable. In so far as they merely charge the heart with some vague disturbance of function, these hypotheses have little in fact to support them. That the vasomotor center is not impaired in diphtheria intoxication may be taken as demonstrated.[1] Two important assumed causative factors are thus excluded. In the pharmacologic laboratory at the University and Bellevue Medical College, New York, Myers and Wallace[2] have examined the possibilities of involvement of tissues other than the heart or vasomotor center. The reactions of the larger blood vessels in intoxicated animals were found to respond to stimulation in essentially the same way as did the arteries of unpoisoned subjects. It may be concluded from this that neither the vasomotor mechanism nor the muscle tissue in the larger arteries is affected to an appreciable extent by the diphtheria toxin. The prominence of gastro-intestinal symptoms in animals poisoned with the products of the diphtheria bacillus and the pathologic picture of the small intestine directed attention to the possible involvement of this region. The intestinal epithelium shows early coagulation necrosis; in the liver the capillaries show a widespread destruction; there is marked congestion in the terminal arteries of other abdominal organs. Myers and Wallace emphasize the significance of these structural changes in the different organs and contend that the engorgement of the mesenteric vessels would offer a sufficient explanation for the low blood pressure. An examination of the intestine as an independent organ has shown, further, that its blood vessels fail to respond in the normal way to the stimulus of drugs like epinephrin, after the subject has been subjected to the intoxication. From such facts it is concluded that the chief factor concerned in the circulatory collapse in poisoning from the diphtheria toxin is the arteriole and capillary dilatation.

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[1] Porter, W. T., and Pratt, J. H.: The State of the Vasomotor Center in Diphtheria Intoxication, Am. Jour. Physiol., 1914, xxxiii, 431. The Nature of the Circulatory Collapse in Diphtheria Intoxication, Current Comment, The Journal A. M. A., July 4, 1914, p. 37.

[2] Myers, H. B., and Wallace, G. B.: The Vascular Response in Poisoning from Diphtheria Toxin, Proc. Soc. Exper. Biol. and Med., 1914, xii, 43.

Breast Feeding.—Efforts to control the flow of milk which do not take into account the periodic character of its secretion are likely for the most part to end in failure. To this fact must be attributed much of the strength of a very widespread conviction that lactation is a most unreliable function. In the course of many observations from which these notes were constructed, no fact stood out with more prominence than the completely erroneous nature of this belief.—Harold K. Waller, M.B., *Jour. Obst. and Gynec. Brit. Emp.*, February, 1915.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

ARKANSAS

Survey of Feebleminded of the State.—The Arkansas Commission for the Feebleminded has received notice from the Eugenics Record Office, Cold Spring Harbor, N. Y., that Dr. Harry W. Crane of that institution has been designated to carry on that part of the survey of the feebleminded in Arkansas, in which the Eugenics Record Office had previously agreed to assist. Dr. Crane arrived October 1 and began the study and classification of the inmates of the state charitable and penal institutions. The next work to be taken up will be a survey of the public schools to ascertain how many and what percentage of the children reported as backward are really mentally defective.

IDAHO

Medical Board to Meet.—The State Board of Medical Examiners will hold its next session in Wallace, October 5 and 6.

Personal.—Dr. George E. Hyde, formerly medical superintendent of the Idaho Insane Hospital, Blackfoot, has moved to Salt Lake City.——Dr. J. Eugene S. St. Jean, Wallace, had a narrow escape from injury when his automobile went over a 50-foot embankment at Mullan. He escaped, however, with only a bruise of the right knee.

Society News.—A medical society has been organized for the five counties of Twin Falls, Gooding, Lincoln, Minidoka and Cassia. At the meeting for organization at Twin Falls, the committee in charge was composed of Drs. Joseph Fremstad, Burley; Joseph N. Davis, Kimberly; and Drs. A. H. Dunn, Truman O. Boyd and Hubert W. Wilson, Twin Falls.——At the meeting of the Tri-County Medical Society for Blain, Gooding and Lincoln counties held in Hailey, recently, Dr. Simons, Wendell, was elected president; Dr. A. A. Higgs, Soldier, vice president, and Dr. Charles F. Zeller, Shoshone, secretary-treasurer.

ILLINOIS

Opening of Schools Postponed.—September 20, at DuQuoin, the opening of the schools was again postponed on account of the development of several new cases of diphtheria. The disease had prevailed for several weeks in the community and a number of deaths had occurred.

Foot and Mouth Disease.—LaSalle, Bureau and Putnam counties were placed under quarantine, September 25, on account of foot and mouth disease having been found in two herds in LaSalle County.——On account of the presence of foot and mouth disease on the Louis F. Swift farm in Lake County, the deer on this farm were killed, September 28.

Typhoid Fever.—Typhoid fever is reported to be epidemic in Menard County where 110 cases have been reported. The secretary of the State Board of Health has sent two of his assistants and three sanitary engineers to aid in the combat against the disease.——Dr. Patrick M. Kelly, superintendent of the Kankakee State Hospital, has ordered that all the employees and patients in the institution, nearly 4,000 in number, be inoculated against typhoid fever.

Personal.—Dr. John C. Foley and family, Waukegan, and Dr. and Mrs. John L. Taylor and family, Libertyville, returned from an automobile trip to the Pacific Coast and back, September 19.——Dr. John F. Bell, Elgin, was run down by a bicycle, September 15, and sustained severe bruises.——Dr. George A. Zeller, Peoria, alienist of the State Board of Administration, has been appointed a member of the board.——Dr. J. F. Echard, Streator, is reported to be seriously ill in the Streator Hospital with inflammation of the stomach and bowels.——Dr. Clarence A. Wells, Quincy, is made chief beneficiary of Mrs. Nellie A. Ward, deceased.——Dr. Harry L. Kampen has been elected president; Dr. Ralph Graham, vice president, and Dr. Charles P. Blair, secretary-treasurer, of the medical staff of the Monmouth Hospital.——Dr. Chester H. Latham, Pecatonica, who has been seriously ill in St. Anthony's Hospital, Rockford, is reported to be convalescent.

Chicago

Meeting of Society of Medical History.—The Chicago Society of Medical History will meet at the Hotel Sherman, Wednesday evening, October 13. Papers will be read by Dr. Fielding H. Garrison, Washington, D. C., and Dr. Arnold Klebs on Leonardo Da Vinci and Vesalius.

Personal.—Drs. Albrecht Heym, Sydney Kuh and George W. Hall have been appointed members of the attending staff of the Psychopathic Hospital, connected with Cook County Hospital.——Dr. I. N. Miller has moved to Kewanee, Ill.——Dr. Evarts A. Graham, assistant professor of surgery at Rush Medical College, has located at Mason City, Iowa, and has been appointed chief surgeon to the Park Hospital.

INDIANA

New Hospital.—The board of commisioners of Sullivan county have voted to build a hospital in Sullivan.

State Society Meeting.—The Indiana State Medical Association met at the Claypool Hotel, Indianapolis, September 22-24, under the presidency of Dr. Frank B. Wynn, Indianapolis. The following officers were elected: Dr. George F. Keiper, Lafayette, president; Drs. Llon J. Willien, Terre Haute, Albert C. Chenoweth, Winchester, and Walter F. Carver, Albion, vice presidents; Dr. Charles N. Combs, Terre Haute, secretary (reelected) and treasurer. Dr. J. Rilus Eastman, Indianapolis and Dr. Albert E. Bulson, Jr., Fort Wayne, were elected delegates to the American Medical Association. Fort Wayne was selected as the next meeting place, the meeting to be held on the last Thursday and Friday in September, 1916.

Personal.—Dr. Cameron Chamberlin, Indianapolis, is reported to be in a critical condition in the Presbyterian Hospital, Chicago, as the result of a nervous collapse.——Dr. Thomas C. Stunkard, Terre Haute, fractured his right arm above the wrist, while cranking his automobile, September 12.——Dr. Edmond J. Beardsley, Alexandria, was painfully injured September 9, by the fall of an iron awning which inflicted a severe scalp wound.——Dr. Lamar R. Knepple, Kokomo, was operated on in Good Samaritan Hospital in that city for appendicitis, August 31 and is doing well.——Dr. John P. Franz, Indianapolis, was painfully injured in an automobile collision during the past week.——Dr. Harold O. Williams has been elected secretary of the Kendallville Board of Health in place of Dr. Albert G. Coyner, who had been secretary more than twenty years, but who died recently. Dr. Cyrus A. Gardener, Kendallville, has been named in place of Dr. Harold O. Williams on the board of health.

IOWA

Hospital for Cherokee.—At a public banquet held in Cherokee, September 10, it was decided to raise a fund of $50,000 for the erection of a hospital.

Nurses' Home for Hospital.—The Park Hospital, Mason City, has recently purchased for $15,000 a new building for a nurses' home adjoining the hospital.

Wishes to Be Medical Inspector.—Dr. Louis A. Thomas, Red Oak, formerly secretary of the State Board of Control, who has been conducting a health examination of schoolchildren of Red Oak for the last three years, is said to be a candidate for the office of medical inspector of public schools of Des Moines.

Anthrax.—On September 16 it was reported that the danger of the spread of anthrax among cattle from the focus on a farm north of Muscatine had been overcome. The stock had all been given a second dose of a preventive vaccine by Dr. C. J. Hackett, the veterinarian in charge of the situation. The disease had caused the death of a number of cattle on the farm, but it was not allowed to extend to other farms.

Smallpox.—The smallpox which had prevailed at Davenport for the previous ten months was believed to have been eradicated, but the discovery of a case in the Madison School, September 20, by Dr. George M. Middleton, city physician, has again rendered the situation uncertain. A large number of pupils were exposed and radical measures have been taken to prevent the spread of the disease. Vaccination is still being urged.

Case Against Clinton Surgeon Dismissed.—The case of Joseph Knox, a mail carrier of Morrison, Ill., against Dr. David S. Fairchild, Jr., Clinton, in which the plaintiff claimed damages amounting to about $30,000 on the allegation that the Clinton surgeon, who had operated on him for kidney disease, had left a gauze sponge in his body, was closed September 22, by this entry in the Clinton District Court docket: "The case of Knox vs. Fairchild, dismissed; judgment against plaintiff for costs." This entry justifies Dr. Fairchild's contention that the case was absolutely without merit.

Free Medical Service.—Dr. William S. Norton, Muscatine, physician of Muscatine county, has offered to conduct a free clinic on three days of each week for the benefit of the poor of the city. The clinics will be held between 9 and 10 on Monday, Wednesday and Friday mornings and will be open to all patients recommended by the City Welfare Association.——It is announced that free medical service will be at the disposal of the students of the State University, Iowa City, this year. Whenever a student becomes ill, he will be at liberty to visit the hospital or to call a university student, without expense.

Personal.—Dr. Wilton W. McCarthy, Des Moines, who suffered a fracture of the femur in an automobile accident near Ames, September 11, was operated on in Mercy Hospital, Des Moines, September 19.——Dr. Channing E. Dakin, Mason City, has been appointed head physician of the Modern Brotherhood of America, succeeding Dr. George E. Baudry, Atchison, Kan.——Dr. and Mrs. Henry Matthey, Davenport, sailed from Rotterdam for New York on the *Rotterdam*, September 8.——Drs. Fred W. Sallander, and Sidney Maldon, Iowa City, sailed from New York September 6 on the *Noordam*, for London, and expect to enter the military service.——Dr. Sidney G. Hands, Davenport, has been elected treasurer of Scott County Medical Society, succeeding Dr. Theo. W. Kemmerer, Davenport, resigned to accept the position of assistant professor of pathology in the University of Southern California, Los Angeles.

MARYLAND

Typhus in Baltimore.—A second case of typhus fever was reported from the Bayview Asylum, September 18. The patient, a white woman living in East Baltimore, was isolated.

New Laboratory.—Work has begun on the foundation for the five-story building of the Hunterian Laboratory connected with Johns Hopkins Medical School. The new building is located at the corner of Wolfe and Madison Streets, will be 50 by 100 feet, and will cost about $65,000.

Hunner Victor in Suit.—The suit of Mrs. Bertha Stephenson and her husband, Charles Stephenson of Ridgely, Caroline County, against Dr. Guy L. Hunner, Baltimore, to recover $30,000 damages for alleged negligence in the performance of a surgical operation on Mrs. Stephenson, was dismissed September 17, by Judge Soper in the Superior Court.

Hospital Force Organizes for Defense.—The guards and other employees of the Springfield State Hospital have decided to form a provisional battalion for national defense at Sykesville. About sixty of the men are anxious to take the military training and the superintendent has arranged with the Adjutant General of the state to have a sergeant of the State Militia instruct the men at Springfield on alternate Saturdays.

Personal.—Dr. James M. H. Rowland, Baltimore, has been made a member of the Board of Regents of the University of Maryland, to succeed the late Dr. David Street.——Dr. Fred P. Weltner has been selected to fill the vacancy on the medical staff of the Sheppard and Enoch Pratt Hospital, Baltimore, caused by the resignation of Dr. Burt J. Asper, who will practice in Asper, Pa.——Dr. Samuel J. Fort, Baltimore, has been appointed physician to the State Bureau of Statistics and Child Labor, succeeding Dr. John C. Travers, Baltimore.——Dr. William E. Moseley, Baltimore, was operated on at the Maryland General Hospital, September 16, and is reported to be improving.——Dr. Frederick C. Warring, Baltimore, who was operated on recently in the Maryland General Hospital, is reported to be convalescen ——Dr. John C. Pound, Baltimore, is reported to be ill with fever.——Dr. William B. Blanchard, chief of the resident staff of the Maryland General Hospital, has resigned.——Fire in the laboratory of Dr. Howard E. Ashbury, Baltimore, September 9, caused damage estimated at several thousand dollars.——Dr. John F. Spearman, formerly of Mercy Hospital, Baltimore, reports that he is on duty in a German line hospital and expects to return to New York in October.——Dr. J. McPherson Scott, Hagerstown, has been appointed chief surgeon of the local staff of the Western Maryland Railroad.——Dr. Herbert E. Zepp, Baltimore, charged with having failed to report five cases of typhoid fever to the Baltimore Health Department, was exonerated and the charge was dismissed as the cases were found to have been reported as required by law.

MINNESOTA

Sanatorium Site Selected.—A site has been chosen for the tuberculosis sanatorium for Roseau and Marshall counties at a point about 5 miles southwest of Holt.

New Hospital Opened.—The Physicians' Hospital, Thief River Falls, erected at a cost of $15,000, was formally opened August 31. The institution has accommodations for twenty-five patients and is provided with up-to-date equipment. The members of the staff are Drs. Herman W. Froehlich, Harvey G. Hieber, Francis H. Gambell, Oscar F. Mellby and Jesse E. Douglass.

Union of Health Bodies.—A movement for merger of the State Sanitary Conference and the Minnesota Public Health Association was begun September 2 at a meeting of the directors of the latter body at Millard Hall, University of Minnesota, at which resolutions expressing approval of the plan, were unanimously adopted. The merger of the two organizations cannot be effected until after January 1 next, on account of a provision in the charter of the conference.

MISSOURI

Physicians' Building.—Contracts have been let for the new physicians' and surgeons' building, three stories in height, to erected at Seventh and Francis streets, St. Joseph.

Hospital News.—A new staff of physicians has been appointed in the Kansas City General Hospital for the hospital and health board.——The Maywood Hospital, Sedalia, was transferred August 24 to the control of the Sisters of Charity of the Incarnate Word.——A meeting of the stockholders of the Southwest Hospital Association, Springfield, was held September 10, at which a proposition was submitted to increase the capital stock from $20,000 to $30,000.

Personal.—Dr. Leroi Beck, Kansas City, was seriously injured by the overturning of his automobile, September 4.——Dr. Charles R. Woodson, St. Joseph, entertained the Buchanan County Medical Society at his sanatorium, September 2.——Dr. Clarence A. Revelle, police surgeon of Kansas City, was cut in the face and hands and bruised in a collision between a motor car and a jitney bus, September 2.——Dr. Clarence D. Ussher, formerly of Kansas City, but at present a medical missionary in Van, Turkish Armenia, is reported to be seriously ill.

Plan to Eliminate School Infections.—Dr. Paul Paquin, health director of Kansas City, has a plan which if adopted he believes will eliminate the spread of infectious diseases due to school contact. It is a modification of the course pursued in many schools at present, but is more thorough and lays greater stress on frequent or constant inspections, etc. The plan provides for the examination of all pupils before admission; frequent examinations by nurses and physicians at school; the teaching of hygiene in every school; work by nurses in the homes; the creation of student sanitary commissions to aid the work. It is estimated that the cost in Kansas City would be about $25,000 a year. The school board is said to be favorable to the plan, provided the money can be obtained.

NEW JERSEY

Hudson County Bacteriologic Laboratory.—A county bacteriologic laboratory has been established in Jersey City under the direction of Dr. Von der Leit.

Typhoid Vaccination for Sailors.—Health Commissioner Joseph F. X. Stack, Hoboken, has administered antityphoid serum to the 2,500 sailors on the German steamers interned in Hoboken.

Bitten by a Dog.—John Kennell, health commissioner of Passaic and president of the Society for the Prevention of Cruelty to Animals was bitten by a dog that was thought to have rabies.

Old Health Officer Employee Dies.—Joseph C. Sayres, aged 70 years, a member and secretary of the Rutherford Board of Health for twenty-nine years, died at his home, September 16.

Health Officer Need Not Be Physician.—At the request of members of the Board of Health of Newark, the examination for health officer of that city, which was held September 23, was thrown open to candidates not practitioners of medicine.

Personal.—Dr. Fred M. Corwin has been reappointed medical inspector of the public schools of Bayonne.——Dr. Charles S. Pancoast, Camden, is said to have been presented with a decoration on account of distinguished service performed by him in Hungary.——Dr. Frederick C. Burt, who has served two terms as mayor of Hammonton, has refused to accept renomination.

NEW MEXICO

Personal.—Dr. Thomas J. Cummins has been appointed medical director of St. Joseph's Sanatorium, Silver City.

New Health Slogan.—The secretary of the Commercial Club of Albuquerque has originated a new slogan for that town which is as follows: "Albuquerque, N. M., the town where the sick get well and the well get prosperous."

State Society Meeting.—The thirty-fourth annual session of the New Mexico Medical Society was held in East Las Vegas, September 6 to 8, under the presidency of Dr. William T. Joyner, Roswell, the subject of whose annual address was "Medical Organization and Public Health." Albuquerque was selected as the place of meeting for next year and the following officers were elected: president, Dr. Evelyn F. Frisbie, Albuquerque; vice presidents, Drs. Clifford S. Losey, East Las Vegas; John W. Kinsinger, Roswell, and Arthur H. DeLong, Gallup; secretary, Dr. Robert E. McBride, Las Cruces (reelected); and treasurer, Dr. Frank E. Tull, Albuquerque (reelected).

NEW YORK

Hospital Remembered in Physician's Will.—According to the terms of the will of the late Dr. Joseph L. Hicks, Flushing, all his surgical instruments, and the books and pamphlets in his medical library, are bequeathed to the Flushing Hospital.

Health Officers Removed.—The State Commissioner of Health, Dr. Hermann M. Biggs, announced the removal of Dr. Emerick W. Crispell, Williamstown, health officer for the township of Amboy, and Dr. William B. Acker, health officer for the town and village of Hannibal. Dr. Biggs had accorded hearings to these gentlemen on the charges of incompetence and negligence which had been filed against them, but neither of the accused officers appeared to answer to the charges.

Personal.—Dr. Oliver W. H. Mitchell has been reinstated as city bacteriologist of Syracuse.——Dr. Howard L. Van Winkle, who has been in charge of the Syracuse Laboratory, has resigned as first assistant city bacteriologist.——Drs. William J. Books, New York City, and James N. Dunn, Schenectady, and six nurses have assumed charge of the medical inspection of the children in the city schools of Schenectady.——Dr. Ida C. Benner, for twenty years supervisor of the primary grades of the schools of the city of Buffalo, has resigned.——Dr. Loring T. Swaim, orthopedist of the Clifton Springs Sanatorium, has resigned and will practice in New York City.——Dr. William J. Thompson of the staff of the Central Islip Hospital has been appointed senior physician to the Danvers, Mass., State Hospital.

Mohansic Sewage Disposal Plan Opposed.—Some time since the Mohansic State Hospital secured the opinion of Dr. Hermann M. Biggs, State Commissioner of Health, that the temporary drainage of the affluent from the sewage disposal plant of the hospital into a lake from which a part of the water supply of New York City was obtained would not be objectionable. The matter was referred to the Department of Water Supply, Gas and Electricity of the City of New York which, after investigation, seriously opposed the plan. The committee then referred the matter to the Committee on Public Health of the New York Academy of Medicine. This committee also fails to concur with Dr. Biggs, giving as its reasons that there is a marked difference of opinion among sanitary experts whether the method of treatment which is proposed renders such sewage harmless and therefore they are not at all convinced that the proposition lacks danger even though it is only a temporary provision. They further state that although this plan of disposal might be safe under the present administration of the State Department of Health, there is no guarantee that in the future it might not be most unsafe through faulty administration and inefficient supervision. They suggest that as disposal of this sewage into the Hudson River would cost the state but $120,000, the State Department of Health should urge this expenditure as preventing all possible further pollution of the Croton water supply from this source.

New York City

Personal.—Dr. and Mrs. George S. Murray have sailed for Liverpool.——Dr. William P. Strain of Far Rockaway recently sustained a fracture of the forearm.——Dr. Charles F. Pabst, Brooklyn, saved a woman from drowning at Patchogue, N. Y., August 26.——Dr. Elizabeth J. Van Slyke, who has been serving with the American Red Cross at France and Belgium, arrived in New York on the *Santa Anna*, September 1.

Successful Control of Rabies.—The Department of Health announces that the measures adopted last year for the control of rabies in this city have been successful, largely through the ordinance requiring the muzzling of dogs. The number of cases of rabies found in animals examined in the laboratories of the department decreased from sixty-four during the second quarter of 1914 to fifteen during the corresponding period of this year. There was a reduction of 267 in the number of persons examined for dog bite and of 282 in the number of dogs examined for rabies.

Find Medical Care of Schoolchildren Inadequate.—The Bureau of Welfare of Schoolchildren of the New York Association for Improving the Condition of the Poor, of which William D. Straight is chairman, has issued a statement derived from the study of health department statistics, which indicates that 695,600 of the 925,000 schoolchildren of New York City, or 75.2 per cent. of all schoolchildren, are in need of medical attention for one or more of the physical defects common to children. Owing to the inadequacy of the staff of doctors assigned to school inspection and examination of children only 33 per cent. of the children are given a thorough physical examination each year. The statement points out that 167,577 children failed of promotion and assuming that this failure in a certain proportion of the children was due to the handicap imposed by one or more physical defects, the question is shown to have a serious financial side, since in addition to the amount expended by the health department it would cost the city $2,898,000 to reeducate this group of children who failed to advance.

NORTH CAROLINA

Third Antityphoid Campaign Opened.—The third antityphoid campaign to be inaugurated in North Carolina by the State Board of Health began in Craven and Warren counties, September 13. The county physician and a representative from the State Board of Health is in charge of the campaign in each county.

Examination Hours Restricted.—The State Board of Health has issued a notice that examinations for admission to the State Sanatorium for the Treatment of Tuberculosis, will be made only in the morning hours of the day, and patients are requested to communicate with the sanatorium and make appointments for such examinations.

Hospital Addition.—The addition to the Mission Hospital, Asheville, is almost completed and will be ready for occupancy by November 1. The addition is three stories and basement in height, fireproof and contains thirty-three rooms, of which thirty-one are to be utilized for patients. When the new building is in service, the hospital will have accommodations for forty-five private patients and thirty-six ward patients.

Bulletin for Teachers.—In connection with the State Department of Education, the North Carolina Board of Health is preparing to bring the subjects of health, disease prevention, and sanitation more closely to the attention of the public school teachers and public schoolchildren of the state. A bulletin is being prepared for the use of teachers which will contain the material for three-minute health talks, and may be used as a supplemental course in physiology, sanitation, and hygiene.

Registering Nurses and Cooks.—A number of cities and towns in the state have passed ordinances providing for the registering of washerwomen. The ordinance demands that they shall have certificates of good health and shall furnish sanitary premises and utensils for doing their work. In a *Bulletin of the State Board of Health* it is said that householders have protested that this ordinance is too narrow, and that it should include nurses and cooks, as they are even more important as disease-spreading factors. An instance is cited of one householder who reported that of three servants employed two were found to have tuberculosis and another a "worse disease." Each had succeeded in keeping the symptoms concealed for a time. The extension of protective ordinances to this class of help is advocated.

PENNSYLVANIA

Municipal Sanatorium Opened.—The new municipal tuberculosis sanatorium for Pittsburgh on the Leech farm, opposite Highland Park, is almost ready to receive patients. The institution has accommodation for 125 patients and several hundred applications for admission are already on file.

Hospital Notes.—Ground has been broken for the additional wing to the Braddock General Hospital to cost $80,000. When finished this will double the capacity of the hospital which now can accommodate seventy patients.——A new operating room, built and equipped at a cost of $40,000, was opened in the McKeesport Hospital, September 16.

New Cases of Typhoid at Danville.—Six new cases of typhoid were reported at Danville, September 22, bringing the total to sixty-nine. Five also have been reported in Mahoning township adjoining the borough, and six from Riverside. Two deaths were reported in the Danville State Hospital for the Insane, bringing the number up to eleven, but no new cases developed beyond the 133 already reported, which adds to the strength of the belief that the epidemic has been controlled through immunizing vaccination.

Personal.—Dr. Clinton T. Saylor, Rockwood, is reported to be seriously ill with appendicitis in the Memorial Hospital, Johnstown.——As the result of a civil service examination recently held in Illinois, to select a state psychologist, Dr. Harrison L. Harley, state college, headed the list and has taken up his duties at the Lincoln State School and Colony.——Dr. Thomas McC. Maxwell, Butler, was painfully injured in an automobile accident, September 16.——Dr. Jacob D. Liebermann, West Grove, is reported to be in a critical condition from septicemia.——Dr. Charles J. Hunt, Harrisburg, has been appointed a member of the staff of the Clifton Springs (N. Y.) Sanitarium.——Dr. James L. Yagle, New Freedom, was run over by his automobile, September 3, but was not seriously injured.——Dr. John J. Ott, Pleasant Valley, is reported to be seriously ill with heart disease at Applebauchville.——Dr. J. Frank Small, York, celebrated the twenty-fifth anniversary of his entrance into the practice of medicine, his retirement from practice and his fiftieth birthday, at his country home, south of York, by entertaining the York County Medical Society at dinner. Dr. Small was presented with a solid mahogany silver-headed cane, appropriately engraved.

State Society Elects Officers.—At the annual meeting of the Medical Society of the State of Pennsylvania held in Philadelphia, September 20-24, the following officers were elected: Dr. Charles A. E. Codman, Philadelphia, president; Drs. J. Torrance Rugh, Philadelphia; Edgar M. Green, Easton; W. Albert Nason, Roaring Spring, and Meyers W. Horner, Mt. Pleasant, vice presidents; Dr. Cyrus Lee Stevens, Athens, secretary (reelected); Dr. Clarence P. Franklin, Philadelphia, assistant secretary; Dr. George W. Wagoner, Johnstown, treasurer; Drs. Irwin J. Moyer, Pittsburgh; James Johnston, Bradford; John B. Lowman, Johnstown, and Jay B. F. Wyant, Kittanning, trustees and councilors; delegates to the American Medical Association, Drs. Americus R. Allen, Carlisle; William F. Bacon, York; Wilmer Krusen, Philadelphia; Charles C. Strickland, Erie, and Frederick L. Van Sickle, Olyphant; and alternates, Drs. Theodore B. Appel, Lancaster; Herbert B. Gibby, Pittston; George G. Harman, Huntingdon; Warren F. Klein, Lebanon; John A. Hawkins, Pittsburgh; Alice M. Seabrook, Philadelphia; Albert R. Matheny, Pittsburgh; William P. Walker, South Bethlehem; Robert B. Watson, Lock Haven, and Charles W. Youngman, Williamsport.

Philadelphia

Ground Broken for Hospital.—Ground has been broken for the erection of a three-story prison hospital for Moyamensing Prison, at the corner of Reed Street and Passyunk Avenue. It will be of granite, 36 by 43.5 feet, and will cost $18,000.

New Wards at the Polyclinic Hospital.—The Augusta Caroline Thorn Wards, presented to the Polyclinic Hospital by her daughter, Miss Mary Thorn, were opened at the hospital, September 22. The wards, which have accommodation for forty patients, cost $7,000. There are five rooms in all, designated as follows: women's surgical ward, women's medical ward, women's private ward, recovery ward, and the serious case ward.

To Raise Fund for the Children's Hospital.—Within a few days the board of managers of the Children's Hospital will announce the opening of a campaign to raise $500,000 to aid in completing the group of buildings for the site at Eighteenth and Bainbridge streets. One building is already finished and if the campaign is successful, plans for the main hospital building will be completed at once. Necessity for this work is emphasized by the fact that while there are in Philadelphia at the present time approximately 350,000 children less than 12 years old, the total hospital accommodation for such children is less than 900 beds.

Medical Institutions About Philadelphia.—Philadelphians will give a modern hospital to the State Masonic Home, Elizabeth, Pa. The building, for which architects are now preparing plans, is to be three stories high, of stone construction and 35 by 100 feet.——Title has been taken by the Orthopedic Hospital to the Parish House at the coroner of Seventeenth and Summer streets, from the Protestant Episcopal Church of St. Luke and the Epiphany for $40,000. The building will be used as a dispensary.

Personal.—Dr. Michael G. Wohl, pathologist to the Samaritan and Howard hospitals, has left Philadelphia to take charge of the laboratory of the Nicholas Senn Hospital, Omaha.——Dr. and Mrs. W. B. Dixon, Frankford, celebrated the sixty-fifth anniversary of their wedding, September 11.——Dr. Luther C. Peter has been elected associate professor of diseases of the eye in the Philadelphia Polyclinic.——Dr. J. William White returned home September 2 after two months of service in the American Ambulance, near Paris.——Dr. J. B. Frame has sailed for Persia as a medical missionary of the Presbyterian Board of Foreign Missions.——Dr. Malcolm C. Grow sailed from New York, September 12, on the steamship *Dvinsk* to serve in a Russian military hospital.

CANADA

A Doctor's Exciting Experiences.—Dr. W. V. Sargant has arrived home in Kingston, Ont., after a lively seven weeks. The government transport on which he went to England early in August was chased by a submarine, and he sailed for home as medical attendant on the S. S. *Hesperian*, which was torpedoed and sunk.

Toronto Physician Returns from Serbia.—Dr. James K. Mossman, Parry Sound, has returned from Serbia, suffering from septicemia contracted by cutting his finger during an operation. Before he went to Serbia 131 doctors in the whole empire out of 300 had succumbed to typhus fever. Dr. Mossman had charge of 300 patients and there were altogether over 4,000 patients with the disease in the town where he was stationed. There were not nearly enough doctors in that country to look after the wounded. A French commission was sent out in the spring which vaccinated all the people in the kingdom both civil and military against smallpox and cholera.

University News.—Queen's medical faculty is hoping the British War Office may see its way clear to allow Lieut.-Colonel Walter T. Connell, M.D., professor of bacteriology and public medicine, who is at present with Queen's Stationary Hospital at Cairo, Egypt, to return to Kingston for the work of the coming session. It has been found impossible to secure a competent supply to fill his position. Twelve of the third and fourth year medical students in France and in England are expected to return for the session's work——Nearly one third of the doctors on the medical faculty of the University of Toronto will be missed when the term opens on September 28. Of the staff of 197 professors and lecturers forty-three went to the front with the University Base Hospital. Dean Clarke states that the medical faculty will probably have as many students this year as last year in spite of the large numbers who have enlisted.

Hospital News.—Members of the different faculties of Laval University, Montreal, met last week in special convention, called by the special committee in charge of the scientific organization of the Laval University Stationary Hospital, and passed the following resolution: "We learn with pleasure of the initiative of the Faculty of Medicine in organizing the Laval Stationary Hospital."——Dr. James C. Connell, dean of the Medical Faculty of Queen's University, Kingston, says that the Egyptian authorities declare that Queen's Stationary Hospital, established at Cairo, Egypt, is the best equipped hospital that has arrived there from France or Britain. It is the only hospital there with a laboratory and an expert pathologist. There are

480 beds in the hospital.——The Ontario Military Hospital being established at Orpington, in the county of Kent, England, under the supervision of the Hon. Dr. Robert A. Pyne, Toronto, has grounds comprising 27½ acres. It has a large dwelling house capable of accommodating a considerable portion of the staff, and Dr. Pyne is proceeding with the erection of temporary buildings to house the hospital. The buildings will accommodate 1,040 patients as well as a number of assistants. They are being erected on lines approved by the British War Office and under the direction of an architect who has had wide experience in construction of that kind, having built several of the British war hospitals. The work will be pushed forward as rapidly as possible. The institution will be known as the Ontario Military Hospital, and Dr. Pyne is remaining in England for the present to personally oversee the erection and equipment of the hospital.

Personal.—Dr. Alfred K. Haywood, assistant superintendent of the Toronto General Hospital, who has been home on sick leave, leaves for his duties in Northern France, October 2.——Lieut.-Col. Ernest C. Ashton, M.D., Brantford, Ont., has been promoted to the rank of brigadier-general.——Dr. James P. Rankin, Stratford, Ont., has been successful in qualifying for the rank of lieutenant-colonel in the Canadian Army Medical Corps.——Dr. Arthur M. Fisher, Woodstock, N. B., and Dr. Lorne deC. MacIntosh, Hartland, N. B., who recently joined the R. A. M. C., have gone to Egypt.——Dr. William D. Sharpe, Brampton, Ont., has been appointed to the staff of a hospital in Serbia.——Dr. George H. Bowlby, Berlin, Ont., has left for overseas service.——Dr. Charles Valery, Edmonton, Alberta, has been appointed chief of the medical service of the fifty-ninth division of the French army.——Among Toronto physicians taking training in the provisional school of instruction for officers of the Army Medical Corps at Niagara-on-the-Lake are: Drs. Frederick A. Cleland, George D. Carleton, Hector C. Hall, B. P. Matthews, W. J. Naber, James M. McCormack, McKilgow, Robert W. Phillips, W. M. Robb, Harold P. Rogers, S. O. Rogers, F. G. Thompson, F. G. Wonbridge and C. R. Young. Other medical men taking this course are J. A. McCampbell, Waubashene, Ont.; Frederick A. Ross and W. A. Lewis, Barrie; George T. Bailey, Cochrane; W. J. Kirby, Englehart; H. H. Harrier, Coldwater; Herbert W. Armstrong, Fergus; D. M. Baker, Toronto; John P. Russells, Cobalt; Lyman C. Lauchand, Dundas; James R. McLean, Salt Ste. Marie; Thomas A. Gourley, Cayuga; F. J. Matthews, Brooklyn, N. Y.

GENERAL

Mississippi Valley Medical Association Meeting.—The forty-ninth annual meeting of the Mississippi Valley Medical Association will be held at the Phoenix Hotel, Lexington, Ky., October 19 to 21, under the presidency of Dr. Hugh Cabot, Boston. Dr. Carl Lewis Wheeler is chairman of the committee on arrangements.

Tuberculosis Week.—Philip Jacobs of New York, on behalf of the National Association for the Study and Prevention of Tuberculosis, announces that tuberculosis week has been arranged from December 6 to December 12. On December 8 a nation-wide plea is to be issued for every citizen of the United States to go to a physician to be examined for tuberculosis. December 10 is to be known as Children's Health Crusade Day.

Obstetricians and Gynecologists Elect Officers.—At the twenty-eighth annual meeting of the American Association of Obstetricians and Gynecologists held in Pittsburgh, September 14 to 16, the following officers were elected: president, Dr. Hugo O. Pantzer, Indianapolis; vice presidents, Drs. Gordon K. Dickinson, Jersey City, N. J., and O. G. Pfaff, Indianapolis; secretary, Dr. E. Gustav Zinke, Cincinnati (reelected); and treasurer, Dr. Herman E. Hayd, Buffalo. Indianapolis was selected as the place of meeting for 1916.

Prevention of Infant Mortality.—The sixth annual meeting of the American Association for Study and Prevention of Infant Mortality will be held in Philadelphia, November 10-12. The subjects to be discussed include Eugenics; Effect of the Economic Standing of the Family on Infant Mortality; Infant Welfare Nursing in Small Cities, Towns and Rural Districts; Institutional Mortality; Midwifery Conditions, and Treatment and Prevention of Respiratory Diseases. The session on Economic Aspects of Infant Welfare will be a joint one with the Philadelphia Medical Society, and will be held at the College of Physicians, November 11.

Health Experts Elect Officers.—At the close of the meeting of the American Public Health Association in Rochester, N. Y., September 10, the following officers were elected: president, Surg. John F. Anderson, U. S. P. H. S., Washington, D. C.; vice presidents, Drs. George W. Goler, Rochester, N. Y.; Charles J. C. O. Hastings, Toronto, Ontario, and Omer R. Gillett, Colorado Springs, Colo.; secretary, Prof. Selskar M. Gunn, Boston, and treasurer, Lee K. Frankel, New York City. Maj. Gen. William C. Gorgas, Surgeon-General, U. S. Army; Dr. C. Stephen Smith, New York City; Dr. Henry D. Holton, Battleboro, Vt., and Dr. Frederick Montizambert, director-general of public health of the Dominion of Canada, Ottawa, were elected honorary members.

Bequests and Donations.—The following bequests and donations have recently been announced:

Jewish Hospital, Philadelphia, $10,000 by the will of August B. Loeb.

Episcopal Hospital, Philadelphia, and Emergency Hospital, Easton, Pa., each $1,000 by the will of Elizabeth Bartlett.

Salem (Mass.) Hospital, $5,000 to maintain a child's free bed to be known as the Arthur Curwin Davis free bed and to provide an appropriation for James B. Curwin, first president of the hospital; and one third of the residue of the estate after the payment of bequests, to the Massachusetts General Hospital, Boston, by the will of Caroline E. Davis.

Masonic Home, Charlestown, Mass., $10,000; Home for Incurables, Boston, Boston Floating Hospital, and Industrial School for Crippled and Deformed Children, each $5,000 by the will of Isaac Eddy, Dorchester, Boston.

Cleveland Medical Library, a maintenance fund of $200,000 by the will of Dr. Dudley P. Allen. The fund is left in trust with the Cleveland Trust Company, the principal to remain intact and the net income is to be turned over to the Association for the next hundred years, or as much longer as the library is efficiently maintained.

To aid in the fight against tuberculosis in Dallas, Tex., a donation of $1,000 by P. P. Martinez.

New York Throat, Nose and Lung Hospital, and New York Association for the Blind, each $5,000 by the will of Francis Finch Robins.

Harvey Society.—The program of the eleventh lecture course of the Harvey Society has just been published. The lectures will be given on Saturday evenings at 8:30, under the patronage of the New York Academy of Medicine, at its building at 17 West Forty-Third Street, New York. The program is as follows:

October 16.—Prof. C. W. Stiles, Hygienic Laboratory, Washington, D. C. "Recent Studies on Schoolchildren, with Special Reference to Hookworm Disease and Sanitation."

November 6.—Prof. A. J. Carlson, University of Chicago. "Recent Contributions to the Physiology of the Stomach."

November 27.—Dr. Eugene F. Du Bois, Cornell University. "The Respiration Calorimeter in Clinical Medicine."

December 18.—Prof. Florence R. Sabin, Johns Hopkins University. "The Method of Growth of the Lymphatic System."

January 15.—Dr. Donald D. Van Slyke, The Rockefeller Institute for Medical Research. "The Present Significance of the Amino Acids in Physiology and Pathology."

February 5.—Dr. Hideyo Noguchi, The Rockefeller Institute for Medical Research. "Spirochetes."

February 26.—Prof. Warfield T. Longcope, Columbia University. "The Susceptibility of Man to Foreign Proteins."

March 11.—Prof. Henry A. Christian, Harvard University. "Some Phases of the Nephritis Problem."

March 25.—Dr. R. T. Woodyatt, University of Chicago. "A Conception of Diabetes."

April 8.—Prof. Stanley R. Benedict, Cornell University. "Uric Acid in Its Relations to Metabolism."

April 29.—Prof. William H. Welch, Johns Hopkins University. "Medical Education in the United States."

The Plague Situation in New Orleans.—After a lapse of nearly a year a case of human plague occurred in the city of New Orleans, August 27. This case was confirmed as true bubonic plague on September 8. The epidemiologic investigations as to the exact source of the infection have not yet been completed but it is believed that it was probably received in the city of New Orleans. The occurrence of this case demonstrates the difficulties surrounding the eradication of the disease and indicate that had it not been for the active cooperative efforts of the United States Public Health Service and of the departments of health of the state of Louisiana and the city of New Orleans, the outbreak would have reached greater proportions and would have been longer continued. It also points out to other cities the necessity for ridding themselves of the rodent carriers of the disease and of thoroughly rat proofing all of their buildings. No fear is felt that this case will be followed by an outbreak. Officers and men of the Public Health Service, well trained in the control of the disease, are on the ground and with the health authorities of the city of New Orleans are taking every precaution to prevent the spread of the disease from the city and within it. During the three months from July 17 to September 18, the United States Public Health Service, in its work against bubonic plague in New Orleans, fumigated 118 vessels with sulphur, 144 with carbon monoxid and 15 with hydrocyanic acid gas; and issued 345 clean bills of health and 54 foul bills of health. In the department of field operations 56,233 rats were trapped, 101,226 premises were inspected and 7,281 buildings were rat proofed. The department of laboratory operations received 7,281 specimens of mus rattus; 13,988 of mus Norvegicus; 1,090 of mus Alexandrinus; 38,915 of mus musculus; 466 wood rats, 308 musk rats and 842 putrid rats. In all, 56,160 rats were received at the laboratory. Of these, 18,605 were examined, 169 were found suspicious and in 7 rats the diagnosis of plague was confirmed. The confirmed rodent cases were as follows: No. 245, captured at 617 St. Marys Street, July 7, diagnosis confirmed July 14, premises treated by intensive trapping, premises vacated and demolished and rat proofing initiated: No. 246, captured at Galves and Erato streets, July 13, diagnosis confirmed July 20, and premises treated with intensive trapping in the neighborhood and on the Galves dump and pushing forward of the rat-proofing operations; No. 247, captured at 536 S. Roman Street, August 1, diagnosis confirmed August 8, premises treated by intensive trapping, destruction of rat harbors, spraying of the premises with pulecide and the completion of rat proofing; No. 248, captured at 2503 Howard Street, August 17, diagnosis confirmed August 25, and the premises treated by intensive trapping, destruction of rat harbors, premises sprayed with pulecide and rat proofing expedited; No. 249, captured at Harmony Street Wharf, August 19, diagnosis confirmed September 2, and premises treated by intensive trapping; No. 250, captured at 1423 Joseph Street, September 6, diagnosis confirmed September 12, premises treated by summary destruction of rat harbors, spraying of pulecide in the vicinity, intensive trapping and rat proofing, and No. 251, captured at 837 S. Fulton Street, September 9, diagnosis confirmed September 14, premises treated by intensive trapping, fumigation by cyanid gas and rat proofing. During the week ended July 24, one suspicious human case was inspected and another during the week ended August 28, and one human plague case was discovered as reported above. Since the initiation of the work against plague in New Orleans, 44,938 buildings have been rat proofed, and 442,497 rodents have been captured, of which 286,087 were examined. Rodent plague was found in 4 cases in mus musculus, in 17 cases in mus rattus, in 8 cases in mus Alexandrinus, and in 222 cases in mus Norvegicus.

Annual Report of Rockefeller Foundation.—The first part of the annual report of the Rockefeller Foundation, covering the period to the end of 1914, deals with the activities of the international health commission. This commission was established June 27, 1913. Mr. Wickliffe Rose, administrative secretary of the Rockefeller Sanitary Commission for the Eradication of Hookworm Disease, was appointed director-general; Dr. John A. Ferrell, assistant director-general, the president and secretary of the organization serving ex-officio as chairman and recording secretary, respectively. The commission had assigned to it, two tasks: to extend to other countries the work of eradicating hookworm disease, and to follow up as far as practicable, the treatment and cure of this disease, together with the establishment of agencies for the promotion of public sanitation and the spread of the knowledge of scientific medicine. The hookworm infection includes practically all countries within the zone from 36 North to 30 South latitude and about 900,000,000 of the 1,600,000,000 inhabitants of the globe live in countries where the infection is prevalent. In the southern states, 39 per cent. of the 548,992 rural children microscopically examined were found to be infected; 90 per cent. of the population of the United States of Colombia, living between sea level and a latitude of 3,000 feet are infected; 50 per cent. of the population of British Guiana is infected; 90 per cent. of the population of Dutch Guiana; 50 per cent. of the laboring population of Egypt; 50 per cent. of the coolies in Natal and 90 per cent. among the plantation laborers in Ceylon are victims of the disease, and in some parts of India and among the coolies on the estates in Malaysia and Fiji which import their laborers from India there is a large percentage of infection. The southern two-thirds of the Chinese empire is infected, the infection of the farm population in the Yangtse Valley running as high as 76 per cent. The relief and control of the disease involve first a survey to determine the geographic distribution and approximate degree of infection; the microscopic inspection of the people and the cure of the infection, and the setting in operation and making effective such sanitary measures as will stop soil pollution. During the first year of the existence of the commission, trips for preliminary examination and conference were made to England, the British West Indies, Egypt and the British dependencies in the Far East and to Central America. As a consequence of these visits, work has begun in British Guiana, Antigua, Trinidad, St. Lucia, Grenada, Egypt, Ceylon, the Malay states, Panama, Nicaragua, Costa Rica and Guatemala. In addition to this work in foreign countries, the commission has also undertaken to complete the program of the Rockefeller Sanitary Commission for the eradication of uncinariasis in the southern states. The methods pursued include work under authority and direction of the government which was begun on a small scale; the treatment of those found infected; a survey of the geographic distribution of the infection; preventive measures and education of the people, the whole being designed as an object lesson in the treatment of disease, demonstrating that as one disease has been conquered others may be.

FOREIGN

Death of Professor Ewald.—Carl Anton Ewald's name fills a prominent place in textbooks on diseases of the digestive tract, as he has contributed much to the diagnosis, differentiation and management of stomach affections. He was born at Berlin, Oct. 30, 1845, and had thus nearly completed his seventieth year. He was one of the two editors of the *Berliner klinische Wochenschrift* until he resigned this task in 1907. He was the successor of Senator in the internal medicine service at the Augusta Hospital, and has served constantly since 1886. Besides numerous works on the pathology of the digestive organs, the Ewald-Boas test breakfast, the Ewald test meal, his stomach tube, and the Ewald-Boas method of expelling the gastric contents through the stomach tube, his name is connected with Sievers' in a clinical test of the motor functioning of the stomach. Before his last long illness, Ewald had taken an active part in sanitary organization, especially in establishing seaside homes for weakly children, and was appointed regular Honorarprofessor in 1908. He has been privy councilor, Geh. Med.-Rat, since 1898. The cable announces his death September 25.

WAR NOTES

Medical and Surgical Exports Increased by War.—The manufacture, in the United States, of drugs, surgical instruments and other medical appliances represented—as long ago as 1909—an approximate aggregate production of $165,000,000. Ordinarily, the total export of this material averages 10 per cent. The following table taken from *Commerce Reports*, July 19, illustrates the rapid growth of export trade in such materials in a single year, obviously due to the international conflict raging in Europe:

Articles	Year ending June 30	
	1914	1915
Surgical appliances	$ 1,289,000	$ 4,500,000
Medical and surgical instruments	206,000	300,000
Dental goods	2,679,000	1,274,000
Patent or proprietary medicines	6,722,000	7,200,000
Miscellaneous drugs, chiefly disinfectants	9,020,000	22,500,000
Total	$19,916,000	$35,774,000

Aid for Belgian Physicians.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the week ended Sept. 24, 1915, lists the following contributions:

Norfolk County Medical Society, Norfolk, Va.		$ 28.00
Carroll County Medical Society, Wolfeboro, N. H.		10.00
Muscogee County Medical Society, Columbus, Ga.		14.00
Receipts for the week ending September 25		$ 52.00
Previously reported receipts		7,814.84
Total receipts		$7,866.84
Previously reported disbursements:		
1,625 standard boxes of food at $2.20	$3,575.00	
1,274 standard boxes of food at 2.30	2,930.20	
353 standard boxes of food at 2.28	804.84	
Total disbursements		7,310.04
Balance		$ 556.80

F. F. Simpson, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

LONDON LETTER

London, Sept. 17, 1915.

The War

THE DEARTH OF PHYSICIANS: NEW SCHEME FOR THE ARMY

The problem of the medical student and the need for more physicians continues to cause anxiety. The director-general of the Army Medical Corps has announced that to outfit the new armies and to supply reinforcements for six months it was estimated that at least 2,500 more physicians of military age would be required. It has been found necessary to bring physicians from Canada, Australia and New Zealand. The hospitals have been in difficulties for some time. Recently the chairman of the British Hospitals Association met Sir Alfred Keogh, director-general of the Army Medical Corps, on the subject. Sir Alfred agreed to extend to all hospitals connected with medical schools the arrangements under which the resident staffs of hospitals are granted honorary commissions in the Army Medical Corps, but he could not extend the operation of the scheme to other hospitals. The following are the details: 1. The scheme is applicable only to hospitals connected with recognized teaching schools (not postgraduate schools). 2. All candidates for commissions must be registered physicians. 3. They must be physically fit for general service. 4. They shall be called on to take general service with the Royal Army Medical Corps after three months' residence, and shall be liable to be called up for service before the expiration of that period, if required, on forty-eight hours' notice. 5. So far as practicable, not more than one third of the number of residents will be called up on forty-eight hours' notice at one time. 6. Each candidate shall, on being approved for a temporary honorary commission, receive a grant of $100 as an allowance for the purchase of uniform. This is part of the grant of $150 issuable on taking general service. 7. No undertaking can be entered into that any residents called up for service will be replaced by the War Office. 8. Applications for temporary commissions should be made to the War Office by the hospital authorities concerned, who will vouch for the candidates whose names they submit. 9. The authorities of any hospital who wish to avail themselves of this scheme should inform the War Office of the number of beds maintained in the institution, and the number of residents employed. The effect of this scheme will be that hospitals will to some extent be secured against losing resident officers, and young physicians going to the front will have some special training before they go.

WOMEN PHYSICIANS

Mr. F. D. Acland, speaking at a meeting in support of the London School of Medicine for Women, said the supply of male physicians was not sufficient to meet the demands of the present day, and would be quite inadequate in the future. There were hospitals in London speaking of closing, not because of lack of patients, but because of lack of physicians. They were now beginning to realize the value of women physicians, and it was a pity they had not done so earlier. This war was teaching the nation the great sphere which medicine now occupied in national welfare. We were learning in a terrible way the cheapness of life and at the same time realizing the value of human life. Sir Berkeley Moynihan said that if five years ago the cost of one day's war at the present rate had been devoted to research work the scourge of tuberculosis would now be hastening to its conclusion, and we should probably have been free from cancer. Writing on the decrease in the number of male medical students and the shortage of physicians which must follow, the *Lancet* says that we must look to the increased entry of women into the medical ranks to meet the situation thus created. "In much of the glut of work at home women are playing their part, and the country has observed with pleasure that the war has given to them a fresh impetus towards the study of medicine. Apart from general practice there are certain well-defined directions where women will find congenial occupation, assured incomes, and opportunities for the recognition of their scientific work." Among these are the superintendence of children's clinics, the inspection of child life, the treatment of diseases of children and women, and practice overseas, particularly in India.

WOMEN DISPENSERS

The War Office is now engaging women dispensers for the military hospitals. The qualifications required are membership in the Pharmaceutical Society, or the assistant's diploma of the Apothecaries' Society. The latter is the qualification usually held by women, who are being engaged only for the duration of the war, in order to permit the male assistants to be sent abroad. The pay is $1.46 per day, Sundays included. In certain county districts allowance and rations are given. The hours are from 9 a. m. to 5 p. m. The women dispensers have given satisfaction, and the War Office has increased the number employed.

Irish Vital Statistics

The Annual Report of the Registrar-General for Ireland has just been issued. The birth rate was low—22.6 per thousand of the population. The marriage rate was 5.41 per thousand—the highest since 1867. The death rate was 16.3—the lowest recorded in Ireland since 1868. The emigration rate was 4.6, much below that for any year since emigration returns were first compiled in 1851. The estimated population in the middle of 1914 showed an increase of 2,386 on the estimate for the middle of 1913. The births during the year 1914 amounted to 98,806, or 22.6 per thousand, which is 0.7 below the average rate for the ten years 1904-1913. Old age, as usual, occupies first place in the causes of death, being credited with 11,565 deaths; tuberculosis comes next with 9,089; and, then, in order, heart diseases, bronchitis, pneumonia, cancer. The tuberculosis death rate shows marked decline in recent years. From 1864 to 1878 it varied between 2.4 and 2.6 per thousand living. From 1879 to 1908 it varied between 2.6 and 2.9. From 1904 the decline has been fairly steady, the rate in the successive years being: 2.88; 2.70; 2.67; 2.66; 2.58; 2.41; 2.28; 2.20; 2.15; 2.14, and 2.07. But the rate is still much higher than that for England, which is 1.4.

BERLIN LETTER

Berlin, Aug. 31, 1915.

Personal

Professor Friedberger, division chief of the pharmacologic institute in Berlin, has been appointed to succeed Professor Römer as ordinary professor of hygiene at Greifswald. Friedberger has made some very commendable researches in immunology.

Professor Gros of Leipzig has been appointed ordinary professor of pharmacology in Halle to succeed the late Professor Harnack.

A recently deceased cleric left the Berlin Institute for Cancer Research an endowment of 300,000 marks ($75,000).

The War

The exchange of severely wounded German and English prisoners is no longer being made. Germany and Russia are now making such an exchange. Provision is also being made to intern sick and convalescing prisoners of various nationalities in Switzerland. The different warring nations have given their consent to such an arrangement.

Although the number of Russian prisoners now in the hands of the Germans and Austrians is astoundingly large, still these two nations apparently are well prepared to make provision for them. Since May 2 no less than 1,100,000 Russians have been taken prisoners. At Braunau in Bohemia a prison camp is being constructed to take care of 100,000 prisoners, a number equaling the population of a large city, and yet the very best care is being given these men, as any American can convince himself by visiting these camps. Notwithstanding the fact that a large number of these Russian prisoners are brought to the prison camp in a most unhygienic condition and frequently suffering from some infectious disease, the care given them in the camp is such that the morbidity rate among the prisoners is remarkably low. Typhus is the disease met with most frequently, the next in order being cholera, typhoid, dysentery and smallpox.

As may be expected, such a large number of prisoners must have a considerable guard. Inasmuch as death and imprisonment must also be reckoned with among German soldiers, it is not possible to detail to the prison camp soldiers who are physically fit for duty at the front; hence, they have detailed to such duty the men who ordinarily were mustered out of service or rejected for service because of physical unfitness. This, of course, does not mean that cripples are detailed for this service, but men who ordinarily could be sent to the front in time of need and yet would not be considered absolutely fit for such duty. Notwithstanding this fact, it is rather remarkable to note how well these soldiers stand up under the strain of their duty. In fact, nearly all show a great improvement in health. A remarkable case in point is that of a man of 45 who, in 1897, entered a hospital because of an extensive left-sided empyema. A rib resection was done, but healing did not take place. Tubercle bacilli were not found. The surgeon performed a thoracoplasty, resecting five ribs, from the fourth to the eighth, removing all of the thickened pleura. The collapsed lung soon expanded again, and later an extensive plastic operation was performed. One-half of the left scapula was removed because the posterior rib stumps had become united to it. Convalescence was complicated by an acute nephritis and a very severe erysipelas. After two years the man was discharged as well. He was in fit condition for work and opened a window-cleaning establishment. When war was declared, his three sons went to the front and he volunteered for service. The military surgeon who examined him declared him unfit for duty because one-third of the left side of his thorax was missing. Thereon the man sought permission to enlist from the emperor himself and the request was granted. He was assigned to a transport as driver of a team, and in that capacity served throughout the entire campaign in France and without any personal inconvenience. Recently he was kicked in the right chest by a horse, and in consequence developed a hemoptysis. He was sent home on furlough. This case is one of great interest because it demonstrates that even a very extensive change in the thorax may permit of most unusual exertions and service.

PARIS LETTER

Paris, Sept. 9, 1915.

The War

THE PRACTICE OF SURGERY IN THE TERRITORIAL HOSPITALS

Experience has shown the disadvantages of leaving the initiative in surgical operations to physicians who are unfamiliar with the practice of military surgery, especially in certain unimportant hospitals. In some such cases, ill advised or useless operations, which would not have been performed in ordinary times without the assistance of a professional surgeon, have been performed to the detriment of the patients. To obviate these serious disadvantages, the minister of war has decided that all general surgical operations shall be performed exclusively by designated professional surgeons in each region after technical advice from the "head surgeons of sectors." The administration of the medical service has divided each territorial region (which represents a zone occupied in times of peace by an army corps) into three or four sectors corresponding to the military subdivisions of the region, and at the head of each of these sectors it has placed a head surgeon, who is to be in absolute control from the technical point of view, irrespective of all questions of rank.

These head surgeons of sectors are to fulfil two functions: 1. As operative surgeons each is to direct a surgical service in the place of his residence; he is to operate, moreover, after having consulted with the medical heads of the respective hospitals, in other establishments on patients who appear to him to need his personal attention. 2. As consulting surgeon, he is to visit the various establishments in his sector once every two weeks, first advising the medical heads of his coming; he is to give the physicians practicing there the necessary technical advice while refraining from becoming involved in questions of administration. In short, the head surgeon of a sector is at once operator, technical inspector and consulting surgeon.

While the head surgeons of sectors are to undertake the important operations within their respective territory, it is evident that they cannot perform all the operations. They must have surgical collaborators. The assistant secretary of state for the medical service has therefore directed the regional director to designate in all the important centers, after consulting with the head surgeon of the sector, one or several *chirurgiens de Place,* charged exclusively with the ordinary run of the surgery of the locality and of the neighboring hospitals, as well as with the urgent operations. These *chirurgiens de Place* are to be chosen from among the professional surgeons. They alone are to operate in the hospitals of that center and the environs.

The unimportant hospital centers are to receive only the slightly wounded patients, on the road to recovery and requiring only simple dressings. In case of an urgent operation on a patient in a hospital having no designated surgeon attached to its staff, the physician at the head of the hospital will telephone or telegraph to the head surgeon of the sector or of the nearest surgical center.

These rules apply only to major surgery (operations on the splanchnic cavities, resections, amputations, explorations for deeply situated projectiles). Minor surgical operations (the opening of abscesses and the extraction of superficial and easily accessible projectiles from the limbs) may be entrusted to the initiative of the physicians in charge of the cases, under the control of the *chirurgiens de Place.* The head surgeons of sectors are to make monthly reports on their tours of inspection and the technical functioning of their service, their residence and the territory within their jurisdiction. These documents are to be sent each month to the war department and to all the regional authorities.

PRISONERS OF WAR UNABLE TO ENDURE PRISON CAMPS TO BE PLACED IN SWISS HOSPITALS

It is well known that in the present war Switzerland has played an important humanitarian rôle, acting as intermediary in searching for prisoners, exchanging seriously wounded prisoners between France and Germany, etc. Switzerland is now about to undertake a new mission of trust, that of the hospital care of a certain number of prisoners of the various belligerent countries. These are to be patients who are not in a sufficiently serious condition to be returned to their own country, but who suffer particularly from the life in the prison camps. The first class taken care of there will probably be the tuberculous, who will be distributed among the principal climatic health resorts of Switzerland—Leysin, Montana, Davos, Arosa, etc. The prisoners are to be allowed a certain degree of liberty which is necessary for the reestablishment of their health. It is important, however, that they be not allowed to make use of this liberty to return home. It is probable that an agreement to this effect will be made not only by the prisoners themselves but also by the governments of their respective countries. Thereby surveillance will be much facilitated and the patients will be able to enjoy a certain degree of independence without entailing any abuses from which Switzerland would have to suffer.

THE HOSPITAL CARE OF PATIENTS WITH FISTULAS CAUSED BY WOUNDS OF WAR

The assistant secretary of war for the medical service has received a report of the presence in certain hospitals of a rather large number of soldiers almost cured of their wounds but still affected with fistulous openings caused by the presence of fragments of bone or of foreign bodies for which no active treatment has been undertaken. These patients ordinarily drag out a protracted stay in the unimportant hospitals, where it is not possible to undertake the surgical cure of these traumatic sequelae. The assistant secretary has therefore given instructions that all such patients who have been placed in hospitals where there is no surgical service shall be removed to hospitals having the necessary staff and equipment to operate for the speedy cure of such cases.

THE "DARDANELLES STAMP"

The Société française de Secours aux Blessés Militaires has contributed toward the conversion of the *Charles Roux,* a transatlantic liner, into a floating hospital. The society has furnished the boat with 300 beds and important hospital equipment. It has entirely at its own expense chartered another boat, the *Saint-François-d'Assise,* which is about to set out for the Dardanelles. The society has also sent out thirty nurses, some of whom are to work on board of the *Charles Roux,* while others are to be assigned to the ambulance units already established on the island of Lemnos. This work has imposed heavy expenses on the society. In order to meet these expenses, it has just issued a new five cent postage stamp called the Dardanelles stamp. This stamp shows an ambulance unit composed of several tents under the shadow of the French flag and the Red Cross standard; a nurse of the society is caring for a wounded soldier. This stamp is sold in books of twenty. On the cover of each book is a colored picture representing the *Charles Roux,* whose white hull is barred with a broad red stripe; at the masthead flutters the French flag and the flag of the Red Cross.

Accident to Professor Hayem

Dr. Hayem, formerly professor at the Faculté de médecine de Paris, has just been injured in an automobile accident which occurred in the outskirts of Chambéry.

Marriages

Clarence Searle Ketcham, M.D., Washington, D. C., to Miss Elizabeth Weed Rogers, at Huntington, L. I., N. Y., September 11.

John H. Nugent, M.D., Southampton, L. I., N. Y., to Miss Marie W. Moffitt of Center Moriches, L. I., N. Y., September 16.

Elmer Harrison Ormsby, M.D., Amsterdam, N. Y., to Miss Muriel Eloise Blackwood, of Huntingdon, Que., September 15.

Orel A. Welsh, M.D., Oregon City, Ore., to Miss Grace Wolcott of San Francisco, in Santa Cruz, Calif., September 11.

P. A. Surg. Ernest Oliver Joseph Eytinge, U. S. N., to Miss Marion Brooks, at Mare Island, Calif., September 11.

Henry Kleinschmidt, M.D., Oshkosh, Wis., to Miss Ethel Morris, of Farmington, Mich., in Detroit, September 1.

John Andrews Evert, M.D., Brainerd, Minn., to Miss Pearl A. Nash of Pipestone, Minn., about August 28.

Walter William Lowell, M.D., Brooklyn, to Miss Alice White of Brinsville, Ont., in Brooklyn, September 15.

Leslie Hall Redelings, M.D., Rochester, Minn., to Miss Gertrude Abbott of Plainfield, N. J., September 8.

Walton Evermont Muns, M.D., Columbia, Mo., to Miss Betty Hawkins, of New York City, September 6.

Thaddeus Hall Green, M.D., Bascom, Fla., to Miss Anna Lucia D'Antoni of Natchez, Miss., September 1.

Albert William Crews, M.D., Thurmond, W. Va., to Miss Pauline Riffe of Greenfield, Ind., September 16.

Ebenezer Ross Faulkner, M.D., to Miss Julia Whiton Little, both of New York City, September 11.

Clarence Vernon Smith, M.D., Tipton, Ind., to Christine Lukas, M.D., of Evanston, Ill., September 8.

Thomas Webster Edgar, M.D., to Miss Arleine E. Lamprey, both of New York City, September 7.

P. A. Surg. Emil Krulish, U. S. P. H. S., to Miss Sarah Sydnor, at Pasadena, Calif., August 30.

Deaths

Austin Flint, M.D. Jefferson Medical College, 1857; aged 79; died at his home in New York City, September 22, from cerebral hemorrhage. Dr. Flint was born in Northampton, Mass., March 28, 1836, the son of Dr. Austin Flint and Anne Skillings. He began his medical studies in the University of Louisville and after two years went to Philadelphia, where the degree of M.D. was given him by Jefferson Medical College in 1857. He practiced in Buffalo for two years, and was professor of physiology in the University of Buffalo. In 1859 he moved to New York City and became associated with the New York Medical College as professor of physiology. He then served in a similar capacity in the New Orleans School of Medicine for a year. At the outbreak of the Civil War Dr. Flint was appointed an Acting Assistant Surgeon in the Army and served for three years in this capacity in the General Hospital, New York City. He was one of the founders and for thirty-seven years was professor of physiology in Bellevue Hospital Medical College. During six years of this time he also filled the chair of physiology in Long Island Hospital College, Brooklyn. He associated himself with Cornell University Medical College in 1898 and was professor and professor emeritus from that time until his death.

He was a Fellow of the American Medical Association, an honorary member of the New York Academy of Medicine, a member of the Association of Military Surgeons of the United States and of many other learned societies. He was given the degree of LL.D. in 1885 and that of A.M. in 1894 by Princeton University and was decorated with the Third Class Order of Bolivar by the government of Venezuela in 1891. Dr. Flint had been visiting physician since 1869, consulting physician and visiting physician to the Insane Pavilion of Bellevue Hospital since 1896; was consulting physician to the Bellevue Hospital Dispensary for nearly fifty years, and from 1874 to 1878, he served as surgeon-general of the state of New York.

Dr. Flint was a prolific writer and his encyclopedic work on the Physiology of Man, in five volumes, has gone through two editions; his treatise on Chemical Examination of the Urine in Disease, is now in its sixth edition, and his Text Book of Human Physiology has required four editions up to the present time. He was also the author of other treatises and of many monographs and articles, chiefly on the subject of physiology, in which he specialized, and on medical biography and history.

Benjamin Lindsay Coleman, M.D. Bellevue Hospital Medical College, 1871; aged 68; a member and formerly vice president of the Kentucky State Medical Association; once president of the Fayette County Medical Society; member of the Mississippi Valley Medical Association; physician to the Good Samaritan Hospital, Lexington, Ky.; for many years curator of Transylvania University and a member of the Board of Trustees of Hamilton College; died at his home in Lexington, Ky., September 14, from cerebral hemorrhage.

Lorne Benjamin Graham, M.D. University of Toronto, Ont., 1907; formerly of Pacific Grove, Calif.; a member of the Medical Society of the State of California; who offered his services to the British Government at the outbreak of the war and was stationed at Eastbourne, England, as supervisor of Red Cross work and later was transferred to the Dardanelles; was killed in the Aegean Sea, August 17, when the transport on which he was proceeding to his new post of duty was sunk by a German submarine.

William F. Muhlenberg, M.D. University of Pennsylvania, Philadelphia, 1872; aged 62; a Fellow of the American Medical Association; formerly president of the Berks County, Pa., Medical Society; one of the founders and a member of the Board of Managers of the Reading Hospital; president of the Pennsylvania German Society; for more than thirty years surgeon to the Schuylkill Valley Railroad; died at his home in Reading, Pa., August 25, from myocarditis.

Emil Ernest Guenther, M.D. New York University, New York City, 1877; aged 61; a member of the Medical Society of New Jersey and a practitioner of Newark; formerly coroner of Essex County, N. J.; visiting surgeon to St. Michael's and St. Barnabas' hospitals, and a member of the staff of the German Hospital, Newark, N. J.; for many years a trustee of the Newark City Home; died at his summer home in Mountainview, N. J., September 12, from heart disease.

Chester Emory Coulter, M.D. University of Michigan, Ann Arbor, 1883; aged 60; for twenty-six years a practitioner of Ogden, Utah; a member of the staff of the Dee Hospital for many years; at one time city physician and a member of the Board of Education; died at his home in Ogden, September 12, from nephritis. The Weber County Medical Association attended the funeral service in a body.

P. Van Benschoten Fowler, M.D. Medico-Chirurgical College of Philadelphia, 1897; aged 49; a Fellow of the American Medical Association; for two terms secretary of the Suffolk County Medical Society; a member of the staff of the Babylon, L. I., Hospital, and of the school board of Centre Moriches, L. I.; died in Brentwood, L. I., September 14, from carcinoma of the stomach.

Susan LaFlesche Picotte, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1889; aged 49; a Fellow of the American Medical Association; for many years prominent as a medical missionary among the Indians of Nebraska and adjoining states; daughter of Chief Joseph, the last great chief of the Omaha tribe; died at her home in Walthill, Neb., September 18.

Charles R. Newton, M.D. University of Pennsylvania, Philadelphia, 1893; aged 58; of Nicholson, Pa.; a Fellow of the American Medical Association; physician in charge of the hospital maintained by the Delaware, Lackawanna and Western Railroad, for its workmen on the Tunkhannock bridge; died September 12, in Bellevue Hospital, New York City.

James Clinton Moore, M.D. University of Nashville, Tenn., 1900; aged 47; a member of the Medical Association of the State of Alabama; for several years a member of the Board of Education of Anniston and one of the prime movers in the building of St. Luke's Hospital; died at his home in Anniston, Ala., September 13, from heart disease.

Robert Gamaliel Cornwell, M.D. Long Island College Hospital, Brooklyn, 1875; aged 62; a member of the Medical Society of the State of New York; once health officer of Riverhead; jail physician for five years and for the last three years coroner of Suffolk County; died at his home in Riverhead, N. Y., September 16, from heart disease.

Charles Lee Crawford, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 52; a Fellow of the American Medical Association; formerly of Vevay, Ind.; but since 1910 a resident of Carlisle, Ark., was shot and instantly killed September 12, near Carlisle, by a negro whom he was attempting to arrest for murder.

Abijah J. Miles, M.D. Medical College of Ohio, Cincinnati, 1863; aged 81; a veteran of the Civil War; a member of the Royal Society of Medicine, London, England, and Cincinnati Academy of Medicine; at one time health officer of Cincinnati; died at the home of his brother-in-law in that city, September 8.

Oliver Willard Sinclair, M.D. New York University, New York City, 1889; McGill University, Montreal, 1891; aged 46; a Fellow of the American Medical Association; one of the owners of the Sequoia Hospital, Eureka, Calif.; was killed in that city September 15, in a collision between his automobile and a railway train.

George Francis McCutcheon Lamont, M.D. Long Island College Hospital, 1896; aged 42; of Newark, N. J.; a Fellow of the American Medical Association and a well known specialist on diseases of the eye, ear, nose and throat; was drowned off Sandy Hook, N. J., September 19 by the capsizing of a motor boat.

Andrew Lawson Grieve, M.D. Bellevue Hospital Medical College, 1898; aged 38; formerly of New Bedford, Mass.; fell or jumped from a third-story window in Providence, R. I., September 11, was impaled on a picket fence and died a few hours later in St. Luke's Hospital, Providence, from his injuries.

Robert Scott Wiley, M.D. Medical College of Virginia, Richmond, 1872; University of Maryland, Baltimore, 1875; aged 69; a member of the Medical Society of Virginia; for thirty-five years a practitioner of Allegheny County, Va.; died at his home in Covington, Va., September 4.

Henry F. Kortebein, M.D. Northwestern University Medical School, Chicago, 1892; aged 46; formerly a member of the State Medical Society of Wisconsin and a well known practitioner of Milwaukee; died at the Oconomowoc Health Resort, near Nashotah, Wis., September 14.

David M. Smith (license, certificate, Missouri, 1884), aged 80; for forty-six years a practitioner of Wright County, Mo.; was thrown from his horse, September 10, the horse falling on him and crushing him; and died from his injuries at his home near Hartsville, Mo., a few hours later.

Frank Mason Putnam, M.D. Dartmouth Medical School, Hanover, N. H., 1878; aged 62; of Gardiner, Me.; director of the National Bank of Gardiner, and chairman of the board of selectmen of Farmingdale; died at his home in Gardiner, September 1.

Jeremiah Campbell Foster, M.D. Hahnemann Medical College, Philadelphia, 1892; aged 44; of Columbus, Ohio; adjuster for Ohio and West Virginia for the Order of Ben Hur; died in Grant Hospital, Columbus, September 14, from heart disease.

George Wall, M.D. Rush Medical College, 1889; aged 63; a Fellow of the American Medical Association and for more than twenty-five years a practitioner of Oregon; died at his home in Cottage Grove, Ore., September 10, from cerebral hemorrhage.

James Sullivan, M.D. College of Physicians and Surgeons, Chicago, 1891; for many years a practitioner of Tama, Ia., but for the last year a resident of Muscatine, Ia.; died at the home of his brother in Machias, Me., September 2, from pneumonia.

Frederick Darius Bickford, M.D. University of Michigan, Ann Arbor, 1882; aged 54; for many years a practitioner of Ogden and Salt Lake City, Utah, but for the last year a resident of Fillmore, Utah, died in that place, September 10.

Walker Schell, M.D. Miami Medical College, Cincinnati, 1878; aged 59; a Fellow of the American Medical Association and a prominent practitioner of southern Indiana; died at his home in Terre Haute, Ind., September 13, from ptomain poisoning.

John Lester Sivert, M.D. University of Nashville, Tenn., 1909; aged 33, of Georgetown, W. Va.; was found dead in his office in Georgetown, September 13, from the effects of poison believed to have been self-administered with suicidal intent.

James W. Wallace, M.D. St. Louis College of Physicians and Surgeons, 1893; aged 55; of Greenway, Ark.; died at the home of his father-in-law in Paducah, Ky., August 28, from uremia and cirrhosis of the liver, August 29.

John G. McGuire, M.D. Jefferson Medical College, 1861; aged 88; until 1895, a practitioner and druggist of Anamosa and Mechanicsville, Ia.; died at the home of his son in Chicago, September 5, from cerebral hemorrhage.

Ralph F. McHenry, M.D. University of Pittsburgh, Pa., 1895; aged 46; a Fellow of the American Medical Association; chief surgeon of the Windber, Pa., Hospital; died in Windber, September 14, from typhoid fever.

Samuel B. Limerick, M.D. Kansas City, Mo., Medical College, 1876; aged 61; a pioneer practitioner of Snohomish, Wash., but since 1898, a resident of Seattle; died in Providence Hospital, Seattle, September 11.

Philander F. Wellman (license, Kansas, 1901), aged 77; of Coffeyville, Kan.; a practitioner of southern Kansas for more than thirty years; died at the home of his son in Kansas City, Kan., September 16.

George T. Prince, M.D. University of Tennessee, Nashville, 1887; aged 50; a resident of Chattanooga, Tenn., for ten years; died at his home in St. Elmo, Chattanooga, September 16, from acute gastritis.

Elias S. Boyd (license, Texas, Fifth Judicial District Board, 1887); aged 66; a practitioner and Presbyterian clergyman of Texas since 1880; died at his home in Dallas, September 10.

Granville Prizer, M.D. University of Pennsylvania, Philadelphia, 1868; aged 70; at one time Register of Wills of Chester County, Pa.; died at his home in Lionville, Pa., September 7.

Carl N. McCaslin, M.D. Medical College of Indiana, Indianapolis, 1902; aged 39; of Earl Park, Ind.; died in the Washington Park Hospital, Chicago, September 17, from peritonitis.

Tyrer Harris Hassell, M.D. University of Louisville, Ky., 1885; aged 53; a member of the Tennessee State Medical Association; died at his home in Springfield, Tenn., September 11.

Joseph M. Wolf, M.D. University of Louisville, Ky., 1870; aged 74; for many years a practitioner of Arkansas, but since 1895, a resident of Texas; died at his home in Rockdale, Tex., August 30.

Henry Lehmann, M.D. New York University, New York City, 1881; aged 56; formerly a practitioner of New York City; died at his home in Brooklyn, September 13, from diabetes.

Philander Noffsinger Hardman (license, years of practice, Iowa, 1887), aged 74; a veteran of the Civil War; died at his home in Sigourney, Iowa, September 6, from valvular heart disease.

William Andrew Walker (license, Kansas, 1901), aged 82; an eclectic practitioner of Galena, Kan.; died at the home of his son in that city, September 15, from cerebral hemorrhage.

Andrew J. Stokes, M.D. Western Reserve University, Cleveland, 1882; aged 56; of Jersey Shore, Pa.; died at a cottage on Pine Creek, near Jersey Shore, September 7.

Newton Rodger McLean, M.D. Medico-Chirurgical College of Philadelphia, 1904; aged 38; died suddenly at his home in Bolivar, Pa., September 12, from heart disease.

Josiah Candor McLaughlin, M.D. College of Physicians and Surgeons, Kansas City, Kan., 1901; aged 50; died at his home in Kansas City, Mo., September 11, from nephritis.

Aquila A. Washburn, M.D. Jefferson Medical College, 1881; aged 56; a member of the Indiana State Medical Association; died at his home in Clinton, Ind., September 16.

William Hardin Boals, M.D. Rush Medical College, 1877; aged 65; of Minneapolis; died in the Eitel Hospital in that city, September 10, after a surgical operation.

William T. Boyd (license, Maryland), aged 55; of Upper Falls, Md.; died at the home of his father in Lebanon, Pa., from disease of the lungs, September 14.

Sidney W. Walters, M.D. Bennett Medical College, Chicago, 1898; aged 51; formerly of Goshen, Ind.; died at his home in Chicago, September 13.

Alvin Steel Davidson (license, Blount County, Ala., 1876), died at his home in Oneonta, Ala., September 2.

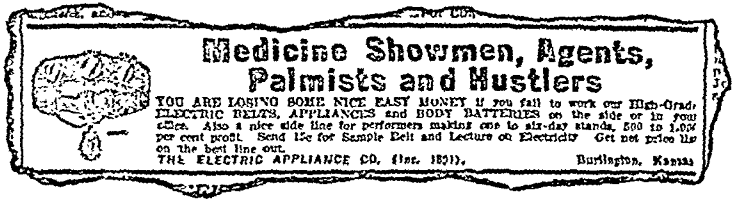
32507
Dr. Robert Kelly Library
S. M. C. Medical College

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ADDISON'S GALVANIC ELECTRIC BELT

While the electric-belt fake has lost the vogue it once had, that class of the community to which the late Mr. Barnum so feelingly referred is still in evidence. This, at least, is the impression one gets from an advertisement that appeared in a weekly publication devoted to the "show world"—the *Billboard*—and here reproduced:



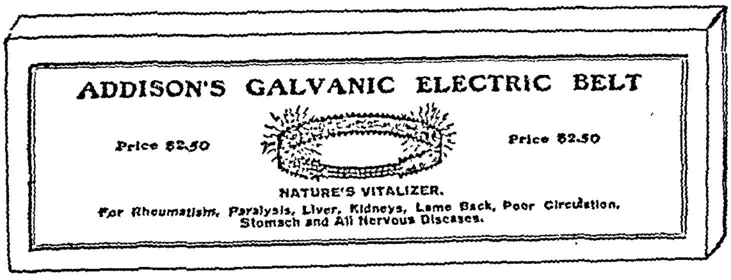
Medicine Showmen, Agents, Palmists and Hustlers

YOU ARE LOSING SOME NICE EASY MONEY if you fail to work our High-Grade ELECTRIC BELTS, APPLIANCES and BODY BATTERIES on the side or in your office. Also a nice side line for performers making one to six-day stands, 500 to 1,000 per cent profit. Send 15c for Sample Belt and Lecture on Electricity. Get net price list on the best line out.

THE ELECTRIC APPLIANCE CO. (Inc. 1891), Burlington, Kansas

This makes interesting reading, especially as the *Billboard* has editorially declared that its "advertising columns are as carefully edited and the offers that get into them are as closely scrutinized as jealous care, scrupulous honesty and constant vigilance can ensure." Further the *Billboard* has said: "We print no swindling patent medicine ads . . . in fact no catchpenny or petty larceny business whatever."

In view of this, it seemed worth while to send fifteen cents to the Electric Appliance Company for the "sample belt and lecture on electricity." The belt came, also the "lecture," to say nothing of a miscellaneous assortment of advertisements of medical or quasi-medical devices. Cheap and tawdry was the belt but a most gorgeous affair, withal. Strips of vivid red and yellow cotton crudely put together and enveloping small pieces of copper and zinc separated by blotting paper. This last, of course, to generate the electric current. The "lecture on electricity" was a gem: "Did not time prevent, we could talk for hours upon the many wonderful things that electricity has accomplished. . . . Electricity contains all the elementary principles and therefore all the healing properties of all things in being. All the balms, oils and minerals in existence are contained in electricity and in their most skillfully combined proportions. . . . If you are weak you need electricity. For lost womanhood or manhood there is nothing like electricity to restore your health. To the ladies we will say, if you have female pains there is nothing better than an electric belt. . . . Electricity is the greatest power on earth. It puts life and force into whatever it touches; gives relief to rheumatism, backache, kidney, liver and bladder troubles, early decay, night losses, lack of nerve and vigor, nervous debility, constipation, dyspepsia, undevelopment and lost vitality and all female complications."


ADDISON'S GALVANIC ELECTRIC BELT
Price $2.50
Price $2.50
NATURE'S VITALIZER.
For Rheumatism, Paralysis, Liver, Kidneys, Lame Back, Poor Circulation, Stomach and All Nervous Diseases.

Miniature reproduction of the package containing the ten-cent electric belt.

All this, of course, leading up to the sale of the Addison Galvanic Electric Belt, which comes in a neat little box, on which is plainly printed the price, $2.50. And this electrical marvel may be purchased from the manufacturers, the Electric Appliance Company, for the trivial sum of $1.10 *a dozen—less than ten cents each.* Question: How much "*nice easy money*" have the "*medicine show men*" taken in this season in selling for $2.50 an "Addison Galvanic Electric Belt" that costs less than ten cents and isn't worth anything?

ARTICLES REFUSED RECOGNITION

Reports of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require a lengthy report. A star opposite a title indicates that a more extensive report on the article in question will appear in the Reports of the Council on Pharmacy and Chemistry, 1915, and that a reprint of the report in question will be sent on receipt of a 2-cent stamp.

Iodum-Miller*

Iodum-Miller (Iodum-Miller Company, Kansas City, Mo.) is advertised to physicians under the implied claim that the preparation is new and original. It is said to be made from "Soot Iodin." What "Soot Iodin" is, the company does not explain beyond making the statement that it is made from "Resublime" iodin and is soluble in water. According to the label:

> ". . . 45 drops equals 1 dr. by weight. Each drop equals the per cent. of iodin in 1 gr. potas. iodid."

Iodum-Miller, when analyzed in the Chemical Laboratory of the American Medical Association, was found to be essentially a solution of iodin and potassium iodid in glycerin. This, of course, disposes of the implied claim that it should be regarded as something new and original. It was found to contain 1.68 per cent. of free iodin and 1.80 per cent. potassium iodid. If the company's statement that 45 drops of Iodum-Miller weigh 1 dr. is correct, then it is obvious that 1 drop of the product equals the percentage, not of 1 gr. potassium iodid, as claimed, but of only 1/20 gr. potassium iodid. This being the case the statement on the label is manifestly false and should constitute misbranding under the federal Food and Drugs Act.

Iodum-Miller is recommended for internal use in doses from ½ drop to 20 drops which, as the examination shows, is equivalent to from 1/40 grain to 1 grain potassium iodid. Yet, the use of this product is suggested in:

> "Pneumonia, Tuberculosis, Pleurisy, Typhoid Fever, Syphilis, Catarrh of Mucous Surface of Alimentary Canal, Autotoxemia, Vomiting of Pregnancy, Rheumatism, Chronic Glandular and Organic Affections."

Its external or germicidal efficacy may be measured by the free-iodin content. The laboratory's analysis showed that this is less than one third of that of tincture of iodin. Nevertheless, Iodum-Miller is recommended for external application in:

> "Pleurisy, Cough, Sore Throat, Pyorrhea . . . Blood Poison, Diseases of Uterus and appendages . . . Gonorrhea . . . Orchitis, Bubo, Prostatitis, Swellings, Enlarged Glands, Etc."

The therapeutic claims made for Iodum-Miller are so obviously extravagant that they need no discussion. The case against this product may be summed up thus: (1) Incorrect statements are made regarding its composition; (2) the therapeutic claims made for it are unwarranted, and (3) the application of a trade name to an established non-proprietary product (glycerin solution of iodin) is unjustifiable. In view of these facts the Council held Iodum-Miller ineligible for New and Nonofficial Remedies.

Iod-Izd-Oil (Miller's)*

Iod-Izd-Oil (Miller's) is said to be an "iodin combination" made "from the same Soluble Soot Iodin as in Iodum Miller." It is said to "liberate Free Soluble Iodin" when applied to the skin, mucous surfaces, etc. It is further defined as "Soluble Iodin combined with water-white Hydrocarbon Oil" and is said to liberate "Soluble Iodin 2 per cent." While these statements suggest that Iod-Izd-Oil (Miller's) contains the iodin-potassium-iodid combination contained in Iodum-Miller, analysis indicated the oil to be a simple solution of iodin in liquid petrolatum. Quantitative determinations indicated, not 2 per cent. of iodin, as claimed, but only 0.42 per cent. and all of this was present as free iodin.

Iod-Izd-Oil (Miller's) is refused recognition because the composition is not correctly stated and because the application of a trade name to an established non-proprietary product tends to confusion.

Hexa-Co-Sal-In

Hexa-co-sal-in (Hexa-Co-Sal-In Company, Red Bank, N. J.) is advertised as "a condensation product of familiar composition." The further explanation that it is "colchi-magnesium salicylate with anhydrous hexamethylenamin" does not make this statement much clearer. "Colchi-magnesium salicylate"—not to speak of its condensation product with hexamethylenamin—is unknown in chemical literature. As a matter of fact, an examination made by the Chemical Laboratory of the American Medical Association shows that Hexa-co-sal-in is a simple mechanical mixture of hexamethylenamin, magnesium salicylate and some colchicum preparation. The composition is therefore falsely stated.

The preparation is advertised as:

"Antirheumatic, Antineuritic, Urinary Antiseptic."
"Uric Acid Mobolizer" (sic).
"Intestinal Antiseptic, Mildly Laxative."
"Whenever a salicylate is indicated use Hexa-co-sal-in."

The combination of salicylates, hexamethylenamin and colchicum in a routine formula is certainly inadvisable: where one of the ingredients is needed, the others may be useless or even harmful. The unqualified advice to use hexamethylenamin and colchicum "whenever a salicylate is indicated" is likely to do harm.

The statement of the composition of this preparation is false; unwarranted therapeutic claims are made for it, and the mixture is unscientific. The Council held Hexa-co-sal-in ineligible for New and Nonofficial Remedies because of conflict with Rules 1, 6 and 10.

Correspondence

Eye Headaches

To the Editor:—Dr. W. F. Cheney has recently written an article entitled "Gastric Headaches" (*Am. Jour. Med. Sc.*, May, 1915, p. 656) which should not go unchallenged on account of an apparent backward step in teaching that recurrent headaches, serious causes being excluded, are due to the stomach and not to the eyes. The poor stomach of civilized humanity has been long maltreated for headaches, and it is a pity to revive such treatment.

That a bad stomach can cause a headache is true, but never a headache that puts a patient to bed and out of business. A headache due to an overdose of alcohol is not due to the upsetting of the stomach, but to the action of alcohol on the brain. That going without food and purging will cure an eye headache is true; so will time. There is no anatomic reason for a stomach to cause a one-sided headache (instanced by Cheney), and there is good reflex reason why any headache may cause retarded digestion, nausea and vomiting. Recurrent eye pains can cause all kinds of gastric disturbances, hyperchlorhydria, etc.

In Cheney's Case 1 he took a hardworking office man and made him take more exercise out of doors, i. e., reduced his hours of eye work. The patient improved as to his headaches.

In Case 2 Cheney stopped the man's alcohol and reduced his tobacco, both of which cause a weakening of the eye muscles; the patient got better of his headaches.

In Case 3, the glasses did the girl no good, and there was "a chronic gastritis of the subacidity type." Cheney does not say for what defect glasses were prescribed, whether or not the eyes were reexamined and the glasses found correct, or whether the patient still wore glasses after the stomach treatment began or whether she discarded them. He corrected a diet "which had been in every way improper both in quality and quantity." This regulation of the diet, with the tincture of nux vomica before meals and cascara at bedtime, stopped the headaches. There is no doubt that a patient subject to eyestrain headaches cannot abuse his stomach with impunity. This simply means that any toxin absorbed from the stomach or intestines may add the last straw to the resisting power of the eye-muscle balance, and a headache is the result.

I contend that if the eye defect is corrected the stomach, if not deliberately abused, will correct itself. On the other hand, no amount of treatment of the stomach, without correcting the eye defects or reducing the number of hours the eyes are used, or correcting a mal-use of the eyes, thus preventing eye tire, will stop migraine headaches.

A headache that is "periodical" "throughout months and years," "rarely lasting over twenty-four hours," in which "the patient awakens with pain in the morning," "growing more intense as the day goes on," or "it may come on in the evening," "may be so severe and prostrating as to incapacitate for any kind of work while they last," "sometimes nausea and vomiting," or "there may be no disturbance whatever of the stomach," is almost always an eyestrain headache and is probably very rarely a "gastric" headache.

OLIVER T. OSBORNE, M.D., New Haven, Conn.

To Aid the Expression of Dosage by the Metric System

To the Editor:—To facilitate the expression of dosage and solutions in the metric system, I desire to recommend a resort to two expedients with which we are all familiar.

First, as the cubic centimeter is a measure of capacity it should have a name. I propose the word "Ceci" (c.c.).

Second, let us disregard all such intermediate expressions as decigrams, centigrams, hundredths of a cubic centimeter, etc., and read all metric expressions in prescriptions in milles in precisely the same manner as we read our monetary expressions in cents. No one reads $1.50 as one and fifty-hundredths of a dollar, but as one dollar and fifty cents. Then 1.500 c.c. would be read one ceci, five hundred milles; millececi being understood. And 5.080 grams would be read five grams and eighty milles; milligram being understood.

Also as we never write one dollar ten cents thus, $1.1, but always thus, $1.10, so we should always have the three places in our metric prescriptions thus, 1.700 gm. and never 1.7 gram. This for clarity and uniformity.

FRANK THOMAS WOODBURY, M.D., Camp Gaillard, C. Z.

The Sweet Potato as an Aphrodisiac

To the Editor:—In a recent editorial [THE JOURNAL, Sept. 11, 1915, p. 957] on the "Sugars of the Sweet-Potato" you cite a quotation from the "Merry Wives of Windsor" as evidence that Shakespeare classed the sweet potato with sweetmeats. Let me suggest another interpretation.

The full quotation reads: "Let the sky rain potatoes; let it thunder to the tune of 'Green Sleeves'; hail kissing-comfits and snow eringoes; let there come a tempest of provocation, I shelter me here (embracing Mrs. Ford)." All three edibles above mentioned were, during Shakespeare's time, considered aphrodisiac, as truffles are today by the laity. The whole situation of the scene together with the allusion to the tune of "Green Sleeves" (a lascivious song) proves the correctness of my contention.

GEORGE MINGES, M.D., Dubuque, Iowa.

Transverse Incision in Operation for Appendicitis

To the Editor:—In reading Dr. A. E. Rockey's paper (THE JOURNAL, Sept. 11, 1915, p. 939), I was struck by the fact that no mention was made by the author, or any of those who discussed the paper, of an important point brought out first, I think, by Professor Kocher of Berne, Switzerland: so far as possible to make the incision follow the line of skin cleavage. This line is transverse or nearly so in the lower abdomen, and when followed, the wound heals better, with a much narrower scar, and far less danger of postoperative hernia. This method has been followed by Babcock of Philadelphia for several years, with excellent results.

R. PENN SMITH, M.D., Pittsburgh.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. *Every letter must contain* the writer's name and address, but these will be omitted, on request.

JUDGMENT FOR DAMAGES—HERNIA—UNDER WORKMEN'S COMPENSATION LAW

To the Editor:—A man was injured in the mines and among his injuries a hernia developed. The employers refused to compensate this man any more than to the amount of $2.75, the price of a truss. He has brought suit. In a journal which I am unable to locate I find that a man got judgment in another state against the industrial commission of that state. Can you give me any reference to this case, or to any similar cases?

John Caldwell, M.D., Rayland, Ohio.

Answer.—The questioner has failed to state whether or not the person injured was working under the workmen's compensation law. If he was working under the compensation law, that law determines the amount of compensation to which he is entitled, and that amount can be recovered without necessity of entering suit. If he was not under the compensation law, he would have to sue under the common law.

Industrial commissions are administrative (and in some states quasi judicial) bodies appointed to administer the workmen's compensation law, and could not be sued by an injured person for compensation. The questioner, therefore, must be in error about judgment having been obtained against an industrial commission of some state for compensation due an injured workman.

In the case mentioned it is quite likely that the employers refuse to pay compensation for the reason that they believe the hernia was not the result of an accident. It is very common for workmen who receive an injury to claim that as a result of the injury a hernia developed, when as a matter of fact the hernia was present before the injury was received. Many cases of this kind have been tried under the common law as well as under workmen's compensation acts, with decisions varying, naturally, according to the facts in each particular case.

HERPES ZOSTER ON MUCOUS MEMBRANES

To the Editor:—Does herpes zoster occur in the buccal mucous membrane? A case was shown recently in the New York Post-Graduate School in which there had been vesicles on the inner surface of the mouth. These had been diagnosed as herpes zoster, but when the patient was shown to the class the vesicles had disappeared, leaving deep depressions on the inner surface of the cheek.

Julian L. Kendall, M.D., New York City.

Answer.—When there is involvement of the second branch of the fifth nerve, the eruption of herpes may occur on the cheek, side of the nose, and one-half of the upper lip. In exceptional cases, it may occur also on the mucous membranes of the cheek and pharynx. Loss of the teeth and necrosis of the jaw have been noted as rare complications.

LACTATION DURING PREGNANCY

To the Editor:—Pardon my suggesting that in your reply to the query of Dr. Norman (The Journal, August 21), you pass too lightly over the possible bad effects to the infant of nursing during pregnancy.

While so far as I know, none of the standard authorities consider that deleterious substances are present in the milk as a result of pregnancy, there is practical unanimity among them in ascribing frequent bad results to infants nursing from the breasts of pregnant mothers. That this is not always due to nervous impressions is attested by the fact that there is not infrequently a deterioration in the mother's milk, even when she is ignorant of her pregnancy. That the decreased value of the milk of a pregnant woman may be due to a diminished supply or to an abnormal quantitative variation in normal constituents does not alter the fact of its undesirability as an infant's diet. Nor does it follow, because pregnancy does not always cause a deterioration of the milk, that it never does, any more than we can assume, because the laity are usually wrong on medical matters, that they are always wrong.

In lieu of further discussion of this question, I beg to refer you to the texts of Pfaundler and Schlossman, Rotch, Holt and others, who are not without reputation in the field of pediatrics. If, in the light of present-day knowledge, it is a matter of little or no consequence to the welfare of the nursling as to whether or not the mother *is pregnant,* it is the duty of pediatricians to lose no time in instructing, not the laity, but a large body of earnest and able general practitioners.

Benjamin H. Brown, M.D., *Muskogee,* Okla.

Answer.—There is no scientific proof of the theories advanced by our correspondent. While it is possible that in certain instances on the incidence of pregnancy the milk does deteriorate, that is not proof that the deterioration is due to the presence of the pregnancy. It would be a matter of clinical importance to determine whether pregnancy in itself without any attendant nervous phenomena produces the deterioration of milk which our correspondent suggests as a possibility. It is an unquestionable fact that a fair proportion of mothers nurse their babies until they learn of the presence of the pregnancy. It has never been possible by chemical analysis to determine any deleterious substances in the milk of pregnant women. Such substances, of course, may not be subject to discovery in this matter, but it would seem to be far wiser to assume that the pregnancy is not to blame for the disturbance in the infant or decrease in the flow of milk, and to seek in all instances to attribute this to some other cause. Certainly more harm can be done by assuming that pregnancy is deleterious to nursing than by assuming the opposite, and the question of the middle ground is at least debatable.

THE CLINICAL USE OF RADIUM

To the Editor:—Please inform me where I can secure literature on the clinical use of radium.

A. A. Ashby, M.D., Red Oak, Iowa.

Answer.—A list of references on this subject was published in The Journal for Oct. 18, 1913, *p. 1475.* The following articles have appeared subsequently to that date:

Literature on Radioactive Waters, The Journal, Sept. 18, 1915, p. 1049.
Abbe, R.: Roentgen-Ray Epithelioma Curable by Radium, The Journal, July 17, 1915, p. 220.
Simpson, F. E.: Radium in Treatment of Keloids, The Journal, April 17, 1915, p. 1300.
Tousey, S.: Roentgen-ray Keratoses on Hand of Roentgenologist Cured by Radium, The Journal, April 24, 1915, p. 1394.
Clark, A. S.: Radium Treatment of Cutaneous Epitheliomas by Single or Massive Doses, The Journal, May 9, 1914, p. 1453.
Tousey, S.: Case of Disseminated Carcinoma of Breasts and Axilla Improved by Radium, The Journal, April 11, 1914, p. 1167.
Rowntree, L. G., and Baetjer, W. A.: Radium in Internal Medicine, Its Physiologic and Pharmacologic Effects, The Journal, Oct. 18, 1913, p. 1438.
Simpson, F. E.: Radium in Skin Diseases, The Journal, July 12, 1913, p. 80.
Simpson, F. E.: Radium, Its Use and Limitation in Skin Diseases, The Journal, Aug. 29, 1914, p. 737.
Holding, A. F.: Relative Value of Radium in Dermatology, The Journal, Aug. 29, 1914, p. 741.
Kelly, H. A., and Burnam, C. F.: Radium in Treatment of Uterine Hemorrhage and Fibroid Tumors, The Journal, Aug. 22, 1914, p. 622.
Janeway, H. H.: Results of Radium in Cancer, The Journal, May 30, 1914, p. 1707.
Chace, A. F., and Fine, M. S.: *The Use of Atophan and Radium* Emanation in Treatment of Gout and Arthritides, The Journal, Sept. 12, 1914, p. 945.
Zinke, E. G.: Curative Effect of Radium, The Journal, Sept. 5, 1914, p. 817.
Newcomet, W. S.: Radium and Roentgen Rays in Radiotherapy, The Journal, Aug. 29, 1914, p. 743.
Schoenenberger, F. J., and Schapira, S. W.: Application of Radium in Bladder for Carcinoma, The Journal, Nov. 21, 1914, p. 1852.
Price of Radium Activators, Queries and Minor Notes, The Journal, Nov. 14, 1914, p. 1780.
Radium in Cancer, Current Comment, The Journal, Aug. 29, 1914, p. 787.
Radium Therapy in Carcinoma, Current Comment, The Journal, Jan. 17, 1914, p. 212.
Literature on Radium, Queries and Minor Notes, The Journal, Oct. 18, 1913, p. 1475.
Price of Radium Preparations, Current Comment, The Journal, Oct. 11, 1913, p. 1382.
Radium in the United States, editorial, The Journal, June 14, 1913, p. 1882.
Endemic Goiter and Radio-Activity, editorial, The Journal, June 7, 1913, p. 1799.
Effects of Radium Emanations on Uric Acid of the Blood, Current Comment, The Journal, Feb. 24, 1912, p. 560.

TREATMENT OF BEE STINGS

To the Editor:—Referring to query of Dr. Kettelkamp, under this heading (The Journal, Sept. 11, 1915, p. 972), I had a similar case and recognizing the evidences of anaphylaxis I gave 10 minims of epinephrin hypodermically with almost immediate relief. This may not be invariably successful, but I believe it is worth trying in such cases.

Frank L. Wood, M.D., Lynden, Wash.

Compensations in Medicine.—For scientific interest the field in medicine is large, and the reward comes in achievement, but the compensation otherwise is negligible. Problems of all sorts develop for the laboratory man as well as for the clinician in medicine and their solution is worth while, but not profitable.—Isadore Dyer, M.D., *New Orleans Medical and Surgical Journal.*

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arizona: Phoenix, October 5-6. Sec., Dr. John Wix Thomas, 200 National Bank of Arizona Bldg., Phoenix.

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Colorado: Denver, October 5. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

District of Columbia: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

Idaho: Wallace, October 5. Sec., Dr. C. A. Dettmen, Burke.

Illinois: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Kansas: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Michigan: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Minnesota: Minneapolis, October 5-8. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Montana: Helena, October 5. Sec., Dr. William C. Riddell, Helena.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

New York: Albany, Buffalo, New York, Syracuse, October 5-8. Mr. Harlan H. Horner, Chief, Examination Division, State Education Bldg., Albany.

Oklahoma: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

Porto Rico: San Juan, October 4. Sec., Dr. Quevedo Baez, Allen St., San Juan.

Rhode Island: Providence, October 7-8. Sec., Dr. Gardner T. Swarts, State House, Providence.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

Utah: Salt Lake City, October 4-5. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Wyoming: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

Montana April Report

Dr. William C. Riddell, secretary of the Montana Board of Medical Examiners, reports the written examination held at Helena, April 6-8, 1915. The total number of subjects examined in was 10; total number of questions asked, 50; percentage required to pass, 75. The total number of candidates examined was 34, of whom 23 passed and 11 failed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1913)	77.8
Hering Medical College	(1910)	77.6
Northwestern University	(1912)	76.5
Rush Medical College	(1905) 85.2; (1908) 80.7; (1913) 84; (1914)	84.4
Medical College of Indiana	(1904)	76.2
Keokuk Medical College, Coll. of Phys. and Surgs.	(1903)	80.4
State University of Iowa, College of Medicine	(1897)	76.4
Tulane University of Louisiana	(1914)	81.8
College of Phys. and Surgs., Baltimore	(1913) 80.2; (1914)	79.9
Kansas City Hahnemann Medical College	(1909)	76.1
Washington University, St. Louis	(1914)	85.3
John A. Creighton Med. Coll.	(1905) 79.7; (1913) 77.6; (1914)	83.2
Jefferson Medical College	(1914)	78.1
University of Tennessee	(1907)	75.1
Vanderbilt University	(1906)	75.2
Wisconsin College of Physicians and Surgeons	(1912)	76.6
University of Christiana, Norway	(1896)	85.3

FAILED

College	Year Grad.	Per Cent.
College of Physicians and Surgeons, Chicago	(1910)	67
Dearborn Medical College	(1906)	73.5
Illinois Medical College	(1903)	71.6
University of Illinois	(1914)	71.6
Keokuk Medical College, Coll. of Phys. and Surgs.	(1906)	57
Sioux City College of Medicine	(1905)	74.1
University of Louisville	(1905)	62
University College of Medicine, Richmond	(1907)	74.1
Marquette University	(1910) 61; (1914)	73.9
University of Christiania, Norway	(1904)	73.5

Minnesota June Report

Dr. Thomas S. McDavitt, secretary of the Minnesota State Board of Medical Examiners, reports the oral, practical and written examination held at Minneapolis, June 1-4, 1915. The total number of subjects examined in was 18; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 44, of whom 42 passed and 2 failed. Six candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Rush Medical College	(1914) 86; (1915) 82,	87
Johns Hopkins University	(1913)	84
Harvard University	(1915)	87
Hamline University	(1904)	75
University of Minnesota	(1914) 84, 85, 87; (1915) 81, 82, 84, 85, 85, 86, 86, 86, 86, 87, 88, 88, 88, 88, 88, 89, 89, 90, (1916)* 83, 84, 84, 85, 85, 86, 86, 86, 86, 86, 87 87, 87, 88,	90.

FAILED

College	Year Grad.	Per Cent.
University of Louisville	(1909)	74
Hamline University	(1904)	71

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Northwestern University	(1910)	Illinois
Rush Medical College	(1903)	Illinois
Sioux City College of Medicine	(1905)	Iowa
University of Minnesota	(1910)	S. Dakota
Medical College of Virginia	(1914)	Virginia
Marquette University	(1913)	Wisconsin

* These candidates have completed a four year college term, but their diplomas are withheld pending the serving of a year's internship in an approved hospital.

South Dakota July Report

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Pierre, July 13-14, 1915. The total number of subjects examined in was 15; total number of questions asked, 95; percentage required to pass, 75. The total number of candidates examined was 11, all of whom passed. Four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
George Washington University	(1909)	82.3
College of Physicians and Surgeons, Chicago	(1907)	84
Northwestern University	(1914)	93.3
Rush Medical College	(1911) 88.7; (1914) 85.2, 88; (1915)	90.7
Detroit College of Medicine	(1895)	81.4
University of Minnesota	(1915)	83.4
University of Nebraska	(1912)	85.7
University of Vienna	(1912)	84.5

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
University of Minnesota	(1913, 2) (1914)	Minnesota
Woman's Medical College of Pennsylvania	(1912)	Colorado

The following questions were asked:

OBSTETRICS

1. Describe the female pelvis and name the bones composing the same. 2. Give cause, symptoms and treatment for puerperal eclampsia. 3. (a) What is menstruation? (b) What is vicarious menstruation? 4. How does the embryo receive nourishment? 5. Does the maternal blood enter the circulation of the child; if so, how? 6. How would you proceed when the placenta cannot be removed? 7. (a) What is abortion? (b) Miscarriage? (c) Premature labor? (d) Give treatment of threatened abortion. 8. What are the causes of albuminuria and edema during pregnancy? How would you treat the former? 9. What are the duties of a physician in a case of labor? 10. Give treatment of placenta prævia when occurring before full term.

EMBRYOLOGY, HISTOLOGY AND ANATOMY

1. From what embryonic layer is the skin developed? Name all other structures developed from the same layer. 2. Describe a fetus at third month. 3. Detail histology of the skin. Make a drawing showing a hair-follicle. 4. Detail histology of adrenal gland. Where are they located? 5. Locate the thyroid gland. Give its function, blood and nerve supply. 6. Describe and locate the ethmoid bone. 7. Name the bones of the tarsus. 8. Describe the ankle-joint. 9. Describe the axilla and name its contents. 10. Give origin, course and distribution of the seventh and eighth dorsal nerves.

PATHOLOGY

1. Describe the gross appearance of the kidney in chronic interstitial nephritis. 2. How does calcareous degeneration of the arteries influence the circulation? 3. (a) What is understood by the phrase "new formation"? (b) Define the term malignant as applied to new formations. 4. What are the pathologic appearances of anemia of the brain? 5. Is cerebrospinal fever more generally sporadic or endemic? 6. What is cretinism, and with what is it associated? 7. What pathologic conditions increase the elimination of urea? 8. Describe how mitral stenosis and aortic regurgitation respectively affect the cavities and musculature of the heart. 9. Describe the formation of an acute abscess. 10. (a) On what principals are tumors classified? (b) Mention the important classes of tumors, giving an example under each class.

REGULAR THERAPEUTICS AND PRACTICE

1. What are the symptoms and signs present in acute articular rheumatism with endocarditis? 2. Give in detail, the dietetic and hygienic rules and regulations you would prescribe in a case of diabetes mellitus. 3. Explain the difference between the principals underlying vaccine therapy and serum therapy. State the character of danger in their application to the human body. 4. Give the temperature chart in each of the following diseases: (a) Typhoid fever, terminating in recovery; (b) croupous pneumonia, terminating in recovery; (c) intermittent fever (quotidian); (d) variola, terminating in death on the twelfth day. 5. Give the incubation periods of measles, scarlet fever, smallpox and chicken-pox. 6. On what theories or principles are cold baths and cold sponging resorted to? State the indications calling for such measures. 7. How would you diagnose a case of diphtheria? Describe the treatment in detail and tell when it would cease to be infectious. 8. (a) Give the therapeutic application of drugs in the different stages of pneumonia. (b) Give the comparative value of chloroform and ether as an anesthetic. 9. In the treatment of chronic interstitial nephritis, what dietetic and hygienic suggestions would you make? Name three drugs that might be employed in the treatment of this condition, with the precise reason for the employment of each. 10. In what pathologic conditions is digitalis indicated and contraindicated? Describe its action.

SURGERY

1. Differentiate between congestion and inflammation. 2. What do you understand by a dissecting aneurysm? 3. What agents are employed for the production of local anesthesia? 4. Describe the operation of exposing the brachial artery for ligation at any selected point. 5. Describe a method of reducing a backward dislocation of the forearm. 6. What would be your treatment of a fracture at the base of the skull? By what symptoms would you base your diagnosis? 7. Describe the operation for the correction of a cleft palate. 8. What site should be selected in performing a paracentesis? 9. Give symptoms and treatment of hammer-toe. 10. Differentiate between appendicitis and renal colic from the standpoint of pain, tenderness, vomiting, urine and Roentgen-ray examination.

PHYSIOLOGY

1. (a) Give functions of gallbladder. (b) When is the bile thrown into the stomach and how? 2. Give the principal characteristics of the digestive juices. 3. (a) What is the difference between the sebaceous and sudorific glands? (b) Where found and their functions? 4. (a) What is the object of respiration? (b) What changes, if any, take place in the blood during respiration? (c) What muscles enter into the mechanism of respiration? 5. (a) Describe fetal circulation. (b) How many circulations during fetal and adult life? 6. What are the various functions of the liver? 7. Name the chief ductless glands and give functions of the same. 8. (a) What is meant by secretion? (b) What is meant by excretion? Give examples. 9. (a) How do the veins differ from the arteries? (b) How is the onward flow of blood maintained in the veins? 10. Give the varieties of connective tissue and where found and their functions.

CHEMISTRY

1. What is the average composition of air? Give chemical name, formula or symbol, valence and atomic weight of each constituent. 2. Give chemical name, symbol and physical properties of each of four gases, which would produce death if inhaled. 3. Give chemical names, symbols and physical properties of three gases having no bad effects if inhaled. 4. Complete the equations and give chemical names and physical properties of all new compounds formed. $Ba O_2$ plus $H_2 SO_4$ equals ? $Fe S$ plus $H_2 SO_4$ equals ? 5. Give chemical name, formula and physical properties of each: aqua fortis; aqua regia; aqua destillata; oil of vitriol; blue vitriol. 6. How much mercury is contained in ten grains of mercurous chlorid? The atomic weight of Hg being 200, and Cl 35. 7. What is formaldehyd chemically? Physical properties? How is it made? 8. Detail a test for strychnin. 9. Detail approximate estimation of urea. What reagent is used? What is the chemical reaction?

10. ℞ Hydrargyri chloridi mitis.................... gr. xv
Potassii iodidi .... dr. i
Aquae.............................q. s. ad oz. ii
Misce.

What change takes place? Describe the appearance of the mixture.

GYNECOLOGY

1. Give a probable cause and treatment of dysmenorrhea in a virgin, aged 16. 2. Detail how you would treat half a dozen interstitial fibroids of uterus, not hemorrhagic, age 30. Why? 3. Give symptoms and treatment of hyperthyroidism, without exophthalmos. 4. Give symptoms and treatment of extra-uterine pregnancy. 5. Give indication for curetment of endometrium.

HYGIENE AND SANITARY SCIENCE

1. What do you understand by malignant pustule and how would you handle the same? 2. Describe a method of aerated disinfection. 3. Describe the method of antityphoid vaccination. 4. Why is pure air more beneficial than polluted air? 5. Describe how infectious and contagious diseases are most commonly spread.

BACTERIOLOGY

1. By what laboratory methods may rabies be diagnosed? 2. Describe the *Bacillus tuberculosis*, its habitat, mode of growth and method of detection. 3. Give the function and products of bacteria. 4. (a) Give a general description of the action of agglutinins. (b) In what disease, other than typhoid, do agglutination reactions occur? 5. (a) Define ptomains. (b) Define leukomains.

SKIN AND GENITO-URINARY

1. Briefly describe eczema and give treatment. 2. Give cause, symptoms and treatment of carbuncle, intertrigo, hives. 3. Describe condylomata; give their cause and treatment. 4. Give causes, symptoms and treatment of enlarged prostate gland. 5. Describe the course of an attack of gonorrhea in the female and give treatment; mention complications which are probable.

EYE, EAR, NOSE AND THROAT

1. What is the Argyll-Robertson pupil and what does it indicate? 2. Give etiology, symptoms and treatment of trachoma. 3. Mention a half dozen common affections of the eyelids and give the treatment for them. 4. How would you treat gonorrheal conjunctivitis? 5. Give cause and treatment of chronic suppuration of the middle ear. 6. Give prophylactic treatment when mastoid disease is threatened. 7. Name at least four general diseases that affect the ear. 8. Diagnose retropharyngeal abscess and give the treatment for it. 9. Give indications for doing tracheotomy. Describe the operation. 10. How would you diagnose nasal polypi? Give treatment.

MEDICAL JURISPRUDENCE

1. How would you determine the distance from which a bullet wound from a revolver had been inflicted? 2. What stains would you look for in suspected poisoning by (a) an acid, (b) an alkali? Give the character of the stains. 3. What would be your duty, as a physician, when called to a case of suspected poison, either by accident, suicide or homicide? 4. How would you distinguish between a case of death by suicide resulting from ingestion of (a) carbolic acid, (b) hydrocyanic acid? 5. How would you determine whether an infant found dead in water had been immersed before death or after?

Book Notices

Alveolodental Pyorrhea. By Charles C. Bass, M.D., Professor of Experimental Medicine at the Tulane Medical College, and Foster M. Johns, M.D., Instructor in the Laboratories of Clinical Medicine at the Tulane Medical College. Cloth. Price, $2.50 net. Pp. 167, with 42 illustrations. Philadelphia: W. B. Saunders Company, 1915.

The authors start out with essentially the following premise. The *Endameba buccalis* is found in pus from pyorrhea pockets. Emetin hydrochlorid injected into a patient having "alveolodental pyorrhea" causes the protozoa to disappear; in addition, the clinical appearance of the tissues involved in the disease is much improved after its use; therefore *Endameba buccalis* is the cause of pyorrhea, and emetin hydrochlorid is specific for the disease. The statement is so positively made that one at first is lead to accept it. But Koch's laws have not been satisfied; there is room for doubt as to the accuracy of the premise. Many other organisms are present in pyorrhea pockets which may be the cause of the disease. These too may be influenced by emetin, either directly or by causing changes in the tissues, rendering them unsuitable for bacterial action; therefore, one cannot unqualifiedly accept without further proof the statement that the *Endameba buccalis* is the cause of pyorrhea alveolaris. Those who have followed the writings of Barret and Smith and Bass and Johns, and attempted to verify their findings, have found amebas very constantly present in pus from pyorrhea pockets; but they have also found them present in practically all unclean mouths in which pyorrhea does not exist. Motile amebas taken from pus pockets about the roots of teeth, and observed in salt solution on a warm stage, do not differ materially from those taken from unclean mouths which are free from pyorrhea.

The statement that pyorrhea alveolaris is cured by emetin also needs further evidence. That some patients are temporarily helped there is little doubt; but that the disease is cured permanently by this drug does not coincide with general experience, and this is admitted in the book, since relapse is indicated; besides, it is acknowledged that surgical means are demanded in some cases. If the peridental membrane be so far destroyed that local trea ment will not effect a cure, then no remedy which cann restore the investing membrane will be effective. The pe dental membrane being an organ, when once destroyed, ca not be restored, as is stated by the authors. This membra when once gone leaves no means of vital attachment of t gums or other approximating tissues to the tooth's roo therefore the pockets caused as a result of destruction of t peridental membrane must remain, unless surgically obl erated. Otherwise the pockets are a constant source of rei fection.

The book contains well-stated truths and not a few fallacies. That traumatism is a fruitful source of pyorrhea as stated there is no doubt, but Talbot and others believe that there are other causes. The authors have not observed the beneficial effects of good brushing of the teeth and gums with the tooth-brush, else they would not have dwelt on the bad results of the use of the tooth-brush, and recommended gauze for cleaning the teeth. Hyperemic gums are often cured by intelligent or rather vigorous use of a stiff tooth-brush. Gauze may merely transfer the débris about the teeth to the interproximal spaces, rendering a bad condition worse. Gingivitis may lead to pyorrhea alveolaris; but not all gingival irritations are pyorrhea alveolaris, as the authors seem to believe; still, amebas may be found in almost every instance in which the gums are irritated at their margins by unwholesome surroundings, such as salivary or serumal deposits, food débris, etc., although the peridental membrane may not be in the least involved. Such a gingivitis, unless dependent on systemic disease or metallic poisons, is readily cured by thorough cleansing and friction. Pyorrhea alveolaris is difficult to cure by any known means except in its early stages. The gums in health are a dense tissue capable of standing much rough usage; indeed, if the gums and teeth do not have plenty of exercise either by the use of coarse food or by brushing, then both gums and peridental membrane become hyperemic.

The authors say (page 45), "We think that almost all are infected before they are 20 years old." If it is meant that amebas may be found in most mouths, one can easily concur in this statement; but if it is meant that all adults have pyorrhea alveolaris, experience in treating diseases of the teeth and mouth does not agree with this conclusion. Differentiation between simple gingivitis and the disease of the peridental membrane, commonly known as pyorrhea alveolaris, should be sharply drawn, as there is a vast difference between the two. The authors do not appear to recognize this distinction.

The authors doubt whether salivary calculi cause inflammation of the gums, or whether the gum inflammation causes the formation of salivary calculi (page 155). Had there been some reading of Black, Talbot, Kirk and others on such subjects, there would have been fewer errors of this kind. A reading of these authors would have given information which would have demonstrated that salivary deposits may be found on parts of artificial plates and teeth which do not come in contact with gums diseased or otherwise, and also that deposits on the roots of teeth, rootwise from the free margins of the gums, are not of salivary origin, but are probably due to inflammation. The positive statement that pyorrhea alveolaris is caused by the endameba and that emetin hydrochlorid is specific for this disease is unfortunate. It has permitted enterprising drug manufacturers to flood physicians and dentists with literature copied from those who have made these positive statements and, as a result, the drug is being used indiscriminately without sufficient knowledge to justify it.

Human Herbivore and Carnivore.—Given the presence of the two human types in one locality, what may be expected of them? History provides abundant answer. Thus in England the square-jawed Roundheads under Cromwell stirred up the country for a few years and disappeared. The hatchet-faced Puritans found England too crowded and settled a new world. Today hawk-nosed bird men rule the upper air. The carnivore is the restless pioneer, inductive, dying ever on the outskirts in search of something new. The herbivore is the sedentary stabilizer, deductive, ever at his appointed task. Both are necessary to the progress of the world, and neither can do the work of the other. It seems unlikely that the human species will ever be reduced to one type, but should this come to pass one might hazard a surmise that the surviving type would be a mixed one, perhaps three parts carnivore and one part herbivore.—John Bryant, M.D., *Boston Med. and Surg. Jour.*, Sept. 9, 1915.

Miscellany

Causes of Death in Eminent Physicians

Hermann Vierordt, son of the founder of clinical sphygmography, has recently published a study of the causes of death of various medical celebrities (*Med. Klin.*, 1915, xi, 499, 525, 549) similar in character to his book (1893) on the abnormities and diseases of famous historical and literary characters (Medizinisches aus der Geschichte, Ed. 3, Tübingen, 1910). In 1907, the late Dr. William Pepper published a study of "Diseases of Great Physicians of the Past" (*Med. Lib. and Hist. Jour.*, 1907, v, 273) to which Vierordt's list, mainly German, may be regarded as supplementary, as most of his items are modern. Pepper gives us many quaint and curious details, such as the fact that Dr. Guillotin did not die of the guillotin, as is claimed; Dupuytren's statement that "he would rather end his life through God's hand than that of a surgeon"; Sir Theodore Mayerne's prediction of the time of his own death, and the fatal duel between Drs. Williams and Bennet of Jamaica (1750), which originated in a controversy about their views on the nature of bilious "fever."

Combining the data of Pepper and Vierordt, we find that the most common cause of death in these brain-workers is apoplexy, of which there are no less than thirty-six cases, including Scultetus (1645), Harvey (1657), Malpighi (1694), Ramazzini (1714), Linnaeus (1778), Stoll (1788), Monro 2d (1817), Jenner (1823), Pinel (1826), Young (1829), Sprengel (1833), Neissner (1860), Baudelocque (1864), Malgaigne (1865), Pfeuffer (1869), Carl Livi (1876), Stokes (1878), Buchheim (1879), Schwann (1882), Bevill Peacock (1882), Ritter von Rittershain (1883), Fechner (1889), Helmholtz (1894), Henke (1896), Fick (1901), Max Nitze (1906), Ponfick (1913) and Julius Pagel (1912). Physicians, no doubt from the drive and worry of their active lives, seem particularly liable to disorders of the circulation. Thus Lancisi (1820), Boerhaave (1738), Morgagni (1771), Currie (1805), Corvisart (1821), John Bell (1838), Richard Bright (1858), Bezold (1868), Ritter von Hoffmann (1897), Sir W. T. Gairdner (1907), Koch (1910) and Angelo Celli (1914) died of heart disease; John Hunter (1793), Sir Charles Bell (1842), Sir James G. Simpson (1870) and Augustus Waller (1870) of angina pectoris; Liston (1847), Morel Lavallée (1865), Gustav Simon (1876), Murchison (1879), Nikolaus Friedreich (1882), Hilton Fagge (1883) and Baelz (1913) of aortic aneurysm, and Wepfer (1695), the historian A. Hirsch (1894) and Heinecke (1901) of "calcification of arteries." Tuberculosis, also apparently one of the greatest enemies of the doctor himself, carried off Swammerdam (1680), Zinn (1759), J. G. C. von Siebold (1798), Bichat (1802), Robert Willan (1812), Bayle (1816), Mathew Baillie (1823), Laennec (1826), Canstatt (1850) and Lockhart Clarke (1880).

Van Helmont (1864) and Dupuytren (1835) died of pleurisy, and the physician-poet Mark Akenside (1770)—whose name Vierordt distorts into "Mark A. Kenside"—and Valleix (1885) of diphtheria. Gout numbered among its victims Scaliger (1558), Jerome Cardan (1596), Sydenham (1689), Linnaeus (1778), William Hunter (1783), Berzelius (1848), Corrigan (1880) and Cohnheim (1884). Smallpox killed Caspari (1828), Döllinger (1841), John Bostock (1841) and Henry Gray (1868); cancer, Lorenzo Bellini (1704), Sir Benjamin Brodie (1862), Mikulicz (1905) and Möbius (1907); septicemia, Spigelius (1625), Claude Perrault (1688), William Hewson (1774) and Kolletschka (1847); typhoid fever, Rush (1813), Spurzheim (1832), William Wallace (1838), Deiters (1863), Oppolzer (1871) and Meyer, the describer of adenoid vegetations, (1895); typhus fever, Reil (1813), John Syng Dorsey (1818) and G. Cornet (1915); dysentery, Thomas Hodgkin (1866), and erysipelas, K. W. Jacob (1858) and Moleschott (1893). Claude Bernard (1878) and Pasteur (1895) succumbed to uremic seizures; Neumeyer (1871) and Liebermeister (1901) to sarcoma of the kidney; Haller (1777) and Scarpa (1832) to cystitis; Riolan (1657), Rivinus (1723) and Portal (1832) to urinary calculus; Jobert de Lamballe

(1867), Theodor Simon (1874) and Karl Schroeder (1887) to brain disease; Bronssais (1838) to hemorrhagic colitis, and W. E. Horner (1853), Griesinger (1868), Middeldorpf (1868) and F. W. L. Bischoff (1882) to perforative typhlitis or appendicitis.

Wirsung (1643) and Delpech (1832) were assassinated; Desault (1795) may have been poisoned; Servetus (1553) was burned; J. von Jessen (1621) and Struensee (1722) were beheaded; Carpue (1846), C. Waller (1862), Bouvier (1877), Pagenstecher (1879), von Gudden (1886), drowned in the Starnberger Sea, while struggling with the insane monarch, Ludwig II of Bavaria, during his last moments), R. Carmichael (1887), Wernicke (1905) and Oscar Lassar (1907) met violent death by accident, and John Aitken (1790), Horace Wells (1848), Michaelis (1848), von Baerensprung (1864), Treitz (1872), Victor Hanot (1896), M. von Pettenkofer (1901) and perhaps Joseph Toynbee (1866) committed suicide. To the list of assassinations should be added Lehr's extensive martyrology of physicians and asylum attendants killed by insane patients.

Electrocardiography

The electrocardiograph is a rather expensive, recently invented instrument, requiring some skill in its use. This probably accounts for the fact that the great majority of medical men have no detailed knowledge either as to the instrument itself or as to its value as a diagnostic aid. A brief review of the subject will therefore be worth while.

The contraction of the muscular walls of the heart set up electrical currents known as action currents. When these currents are conducted from the patient to a sensitive string galvanometer (a silver thread approximately 1/25,000 inch in diameter suspended between the poles of a magnet) definite movements of the string result. These movements are photographed by a moving plate or film. The resulting picture is an electrocardiogram and, in reality, is a graphic portrayal of the cardiac action. Extensive experimental work by Einthoven, the inventor of the electrocardiograph, by Thomas Lewis and others, has demonstrated the significance of the various points in such a tracing and the alterations in this picture that occur in various pathologic conditions have become definitely established.

With the aid of the electrocardiograph it has been almost indisputably proved (Eyster and Meek, Experiments on the Origin and Propagation of the Impulse in the Heart, *Heart*, 1914, v, 119) that the impulse which causes the heart to beat arises in a specific bundle of muscle fibers in the roof of the right auricle, known as the sinus node. This impulse is conveyed to the various chambers of the heart by a distinct system of fibers. When other points in this system become more irritable than the sinus node, a contraction impulse may arise here, and an extra beat or so-called extrasystole results. Whether such an impulse originates in the auricle, in the right or left ventricle or in the junctional tissues between the auricles and ventricles may be determined with the electrocardiograph. The large group of cardiac irregularities caused by extrasystoles has thus been definitely classified. An irregular pulse is often a matter of great concern to both the patient and the physician, and the electrocardiograph is an essential aid in determining whether an irregularity is of grave import or whether it is an extrasystole and of little significance.

Examples of heart block give a characteristic tracing. Since an auricular contraction results in a definite wave followed in a short interval by a series of waves depicting the ventricular contraction, any disturbance between the number and regularity of the auricular and ventricular beats is graphically portrayed. If there is a complete blocking of the impulse in its passage from the auricle to the ventricle through the bundle of His the auricular waves in the tracing are much more numerous than the ventricular waves and have no relation to them. This is the result of the independent rhythm of the auricles and ventricles that is established in complete block. If the blocking is only partial every second or third auricular impulse gets through the bundle of His and is followed by a ventricular contraction.

The advent of the electrocardiograph has established a heretofore unknown type of heart irregularity, auricular fibrillation, and one that is probably more frequently encountered than any other. In this condition the auricular musculature is fibrillating and instead of 60 to 80 strong auricular contractions per minute there may be as many as 400 to 500 pseudocontractions. Few of these impulses get through the bundle of His and the result is a markedly irregular pulse. Such a tracing contains numerous small auricular waves bearing no relation to each other and only an occasional one followed by a ventricular systole. When auricular fibrillation is suspected on physical examination an electrocardiogram is an invaluable help in establishing the diagnosis.

Information concerning the myocardium as a whole is also furnished. Hypertrophy of the auricles or of the ventricles is represented by an increase in the height of the auricular or ventricular waves. In mitral stenosis an increase in the height of the auricular wave has often called attention to a lesion which has not been suspected on physical examination. Recently it has been possible to take tracings representative of the heart tones and thus murmurs and their relation to the cardiac cycle are accurately recorded.

Physicians and the Hall of Fame

The *British Medical Journal* thus comments on the tabulation by Mr. Pickering in *Science* of the votes at the three elections of the American Hall of Fame:

"Politicians head the list. Next come authors. It is significant of the value of popular judgment that while of eleven writers of fiction nine were elected, of ten authors who dealt with serious subjects, only three gained the *arbitrium popularis aurai*. Next come soldiers and sailors. Doctors hold a low position, but this is not surprising, as medicine is not a profession which leads to popular fame among Anglo-Saxon peoples. What is surprising is that in a country like America which swarms with inventors, and where the cult of the 'almighty dollar' is generally believed to be so prevalent, engineers and business men are nearly at the bottom of the list. 'Philanthropists' stand lowest of all. The list suggests some curious reflections as to the mentality of the American people, but it would be rash to draw any definite conclusion from the figures. The system of voting is probably accountable for the strangeness of the results, for till now the judges have been literary men who may be assumed to have been more familiar with the work of authors than with that of men whose activity was displayed in other fields. Even allowing for this, it is remarkable that among so practical a people fiction should hold the place of honor in literature; and it is hard, as Mr. Pickering says, 'to believe that there are . . . twelve authors more famous than any American missionary, physician, engineer, or business man.'"

Improvement in Milk Supply

The National Clean Milk Society of London is making an effort to raise the hygienic standard of milk and milk products sold in London, and to educate the public as to the importance of a clean and wholesome milk supply. According to A. E. Ingram, U. S. consul at Bradford, when the milk and dairies act of 1914 was passed an effort was made to have a provision inserted for certified milk such as is now produced in the United States. The provision failed of adoption. Efforts are also being made to have the scorecard system of dairy inspection adopted such as is used in the United States. The city of Bradford has already adopted the plan. The British Board of Agriculture is encouraging the formation of milk recording societies. It is said that heretofore the dairy men have not appreciated the value of milk records. Up to March, 1915, only sixteen societies have been formed throughout the country.

Medicolegal

Amount Physicians May Prescribe Under Harrison Antinarcotic Law

(United States vs. Friedman (U. S.), 224 Fed. R. 276)

The United States District Court, Western District of Tennessee, sustains a demurrer to, and quashes, an indictment that charged the defendant with having dispensed, distributed, and prescribed gum opium and powdered opium, the derivatives, compounds, and preparations thereof, to wit, morphin sulphate, heroin, and cocain, a derivative of coca leaves, without the dispensing, distribution, and prescription as aforesaid being in the course of his professional practice; that is to say, that he dispensed, distributed, and prescribed the aforesaid drugs in quantities more than was necessary to meet the immediate needs of a patient, and did not distribute, dispense, and prescribe the drugs in good faith and as a medicine. The court says that the indictment was drawn under Section 2 of the Act of Congress approved Dec. 17, 1914, known as the Harrison Antinarcotic Law. An attentive examination of the indictment disclosed that the offense with which the defendant was charged was dispensing, distributing, and prescribing the prohibited drugs in quantities more than was necessary to meet the needs of a patient, and that they were not distributed, dispensed, and prescribed in good faith and as a medicine. As the court understands Section 2 of the Act, the only thing required of a person, who shall give an order as provided in said section for the drugs mentioned in the act, is that he shall make or cause to be made, at the time of giving the order, a duplicate thereof, on a form issued by the commissioner of internal revenue, and in case of the acceptance of said order he shall preserve such duplicate for two years. The defendant was not indicted for failure to do either of these last-mentioned things. Subsection "a" of Section 2 provides that nothing contained in the section shall apply to physicians, dentists, or veterinary surgeons, registered under the act, who dispense or distribute any of the drugs in the course of their professional practice, provided that they shall keep a record of all of such drugs dispensed or distributed, showing the amount dispensed or distributed, the date, and the name and address of the patient to whom such drugs are dispensed or distributed, unless the physician shall administer them personally to the patient. But the defendant was not indicted for violation of subsection "a," but, as has been said, he was indicted for giving a prescription for said drugs in quantities more than was necessary, and not in good faith and as a medicine. The court fails to find in the act of Congress under examination any language making the doing of the things with which the defendant was charged a violation of law. In other words, there is no limit fixed to the amount of said drugs that a physician may prescribe, nor is there any duty imposed on him, other than to keep a record of all such drugs dispensed by him, and the name and address of the patient, except those to whom he may personally administer, and that he must preserve the records for a period of two years. For failure to do either of these things the defendant was not indicted. The result is the court holds good a demurrer to the effect that the acts of the defendant averred in the indictment are not prohibited by law, nor are they in violation of any law of the United States.

Constitutionality of the Harrison Antinarcotic Law

(United States vs. Brown (U. S.), 224 Fed. R. 135)

The United States District Court in the Western District of the State of Washington overrules a demurrer to an indictment charging the defendant with unlawfully having in his possession and under his control about 3 drams of "yen shee," a derivative and preparation of opium, he not having registered nor paid the special tax as required by the Act of Congress of December 17, 1914. The demurrer was filed on the ground that the indictment did not state facts sufficient to constitute an offense under any valid or constitutional law of the United States. It was contended that the support of the indictment, if any, must come from Section 8 of the act referred to, and that this section, which makes it unlawful for any person who has not registered and paid the special tax as provided by this act to have in his possession or under his control any opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof, is unconstitutional, in that it is an attempt on the part of Congress to encroach on the police power of the several states; that the only right Congress has to control the sale of a commodity, within the provisions of the Constitution, is (a) to regulate commerce; (b) the right of taxation; and neither of these rights is invoked by Section 8. But the court says it thinks it may assume, and will take judicial notice of the fact, that no opium is grown or produced in this country, and that the purpose of the act is to prohibit the importation of opium. The purpose of Congress being to prohibit the importation, manufacture, or sale of the drugs described, and by this act the drug having become an "outlaw" in the country, Congress has a right to trace its presence, and has the power to punish any person in whose possession this "outlawed" article may be found. The possession of such drug or control thereof is made presumptive evidence of the unlawful importation, manufacture, etc., as well as an obligation to pay the special tax provided by the act, and a failure to register and pay the tax as provided would be a fraud on the United States, in that it deprived the government of the revenues provided by the act. Congress, having the power to exclude the drug entirely from the United States, and the right to regulate its relation to interstate commerce, and to levy a tax, must be held to have the right to make it unlawful for any person who has not complied with the provisions of the act by registration or paying a tax, to have in his possession this "outlawed" article. The act must be construed as a whole, and force given to every part when this can be done.

Indictable Use by Physicians of Mails to Defraud

(United States vs. Baxter et al. (U. S.), 221 Fed. R. 473)

The United States District Court, Northern District of California, overrules a demurrer to an indictment for using the mails in furtherance of a scheme to defraud. The court says that the scheme, as set forth in the indictment, was that the defendants, as physicians, should by means of advertisements induce certain persons named in the indictment, and others to the grand jurors unknown, to communicate with them relative to real or supposed ailments. That the defendants should then, by means of letters and through the postoffice department, and irrespective of any symptoms communicated to them, and even in cases in which the symptoms indicated health, rather than disease, and without any real knowledge of the condition of the person so induced to communicate with them, state to such person that he was afflicted with a disease which the defendants could cure, and that they would furnish treatment for such disease for a certain sum of money, and by means of such letters would induce such person to send them money for the purpose of procuring medicine and treatments skilfully and properly designed and prepared for the cure of the disease with which such person was afflicted, or had been induced by them to believe himself afflicted, which money they would fraudulently convert to their own use. That in return for such money they should send to such person certain medicines of little or no value, and not medicine and treatment skilfully and properly designed and prepared for the cure of such person, the defendants having no real or proper knowledge of such person's condition, or whether he was diseased or not, or whether or not such purported medicine was capable of benefiting such person, as they well knew. It was contended on the demurrer to the indictment that for many reasons the foregoing scheme was not one to defraud within the meaning of Section 215 of the criminal code. But to this contention the court is unable to agree. When it is averred that a physician has devised a scheme to defraud, by stating to one who offers himself as a patient that such person is afflicted with a disease which the physician can cure, and this irrespective of the symptoms, and whether or not the symptoms indicate health rather than disease, and without any real knowledge of the condition of such person, and by such statement should cause and induce such person to send him money, for which he would send in return medicine of little or no value, and not medicine skilfully and properly designed and prepared for the cure of the disease with which such person was afflicted, or had been induced by such physician to believe that he was afflicted, the court thinks it clearly appears that the physician was engaged in one of the most reprehensible schemes to defraud of which the law can take cognizance. It may, indeed, be quite true that medicine is not an exact science, and that there is a wide divergence of opinion, even among reputable physicians, as to what is the proper method of treatment for any particular disease. But this fact is beside the mark here. All such treatments contemplate at least good faith on the part of the physician, and are not based on a deliberate design on his part to procure money from a person who, so far as the physician knows or has reason to believe, is in sound health, by stating to him that he is afflicted with a disease; and this is true, whether resort be had to the use of the mails or not. The design as alleged may not be easily proved; but it is a design to defraud, and the indictment is sufficient.

A Limited Partnership Between Physicians and Their Liability for Malpractice

(Pier vs. Cauley et al. (Neb.), 152 N. W. R. 298)

The Supreme Court of Nebraska, in reversing a judgment rendered in favor of the defendants, two physicians sued for malpractice, and remanding the cause for further proceedings, holds good, as against a joint demurrer, a petition which charges concurrent and inseparable acts of negligence, which result in injury to the patient, against two physicians charged with the care and treatment of the patient. The court says that the plaintiff alleged that the defendants, Drs. Cauley and Allenberger, one of whom practiced at one place, and the other at another, had an arrangement with each other whereby, in cases in which Dr. Cauley was called in his professional capacity to attend and treat a patient for a wound or physical injury of any kind, and particularly when he was called in a case which needed or required a surgical operation or treatment, he was to call Dr. Allenberger in consultation and to aid and cooperate with him in such treatment and operation, and was to charge his patient for the services of each of them. That the plaintiff broke her leg below the knee in such a manner that the bones protruded from the wound and dirt and foreign substances were admitted therein. That Dr. Cauley was called to treat the case, but negligently omitted to remove from the wound the dirt and foreign substances, and negligently failed properly to treat the injury or reset the broken bones, in addition to which he urged the plaintiff's parents to cause her removal to a hospital in the city where Dr. Allenberger was located, and where Dr. Allenberger was, pursuant to the arrangement before mentioned, called by Dr. Cauley to come and aid him in the treatment of the case, and that Dr. Allenberger, with the knowledge and consent of Dr. Cauley, and pursuant to said arrangement with him, continued unskilfully and negligently to treat the plaintiff for said injury for a period of over nine weeks. That, as soon as the plaintiff's parents learned her true condition and of the alleged negligent and incompetent treatment, they took her to another surgeon, who amputated her leg. the amputation being necessary to save her life and made necessary by the "negligence, unskilfulness, and carelessness of said defendant." The defendants filed a joint demurrer to the plaintiff's petition on the grounds that the several causes of action therein stated were improperly joined, and that there was a misjoinder and a defect of parties defendant. The demurrer in effect admitted the truth of all the allegations of the petition, one of which was with regard to the arrangement or agreement between the defendants, before mentioned. The effect of this agreement was to create a limited partnership. No separate cause of action was necessarily stated against Dr. Cauley, because the acts of negligence charged were continuing acts, beginning with his first failure to cleanse the wound, and extending throughout the time that the patient was under the care of himself and his special partner, Dr. Allenberger. Counsel for the defendants cited a number of authorities in support of their contention that the petition stated two causes of action, one for the wrongful acts and omissions of Dr. Cauley while acting alone, and another for the acts and omissions of the two physicians while acting jointly; but in the cases cited there was no concerted action between the different defendants, but each of the wrongdoers acted independently of all others, although the effect of what they did merged and produced the injury. If the defendants acted separately, each independently of the other, there being no concert of action between the two, there would be no joint liability; but if their acts were concurrent and inseparable, and, taken together, produced the injury alleged, they were jointly liable therefor.

Standard for Measuring the Nuisance Qualities of a Noise

(Wahrer vs. Aldrich (Wis.), 152 N. W. R. 456)

The Supreme Court of Wisconsin affirms a judgment holding that a proprietor of a hotel was not entitled to have the operation of a neighboring roller skating rink permanently enjoined, but only later than 10 o'clock at night. The court says that, as would be expected in a case of this kind, there was a wide range in the testimony regarding the volume of noise made by the rink. Some described it as very loud and annoying and others as nothing out of the ordinary. All practically agreed that the noise made by the skating was that of a rather loud rumbling noise—much like that of a train passing over a bridge. Some found the music pleasant, some unpleasant, and on others it seemed to have made no particular impression. There was medical testimony to the effect that the noise was not of a kind physically to annoy persons of ordinary sensibilities. The court thinks that the evidence supported a finding of fact to the effect that the operation of the rink, as conducted, was not physically annoying to any of the permanent residents, of ordinary sensibilities, in the neighborhood. The standard for measuring the nuisance qualities of the noise was its effect on a person of ordinary sensibilities. It was to be gaged neither by a neurotic nor a phlegmatic temperament. To constitute a nuisance, it must be physically annoying; it was not sufficient for it to offend mere taste or what was ideally desirable. An actual effect of discomfort must be produced by it on the average nervous organization before courts would interfere.

Examination by Physicians for Defense After Exhibition to Jury

(Houston & T. C. R. Co. vs. Bukowsky (Tex.), 175 S. W. R. 477)

The Court of Civil Appeals of Texas, in affirming a judgment in favor of the defendant railroad company, in this personal injury case, holds that there was no error in refusing to permit two physicians to examine the plaintiff's foot outside of the courtroom, and not in the presence of the jury, with the view of determining whether or not he was in fact injured as claimed by him, and thereafter testifying as to the result of their examination, which, it was contended, would have disclosed that the plaintiff was malingering, and that his foot was not in fact injured. The court says that it was not shown that a full examination could not have been made by the physicians in the courtroom and in the presence of the jury. Where the plaintiff voluntarily submits to a personal examination in the presence of the jury by physicians of his own selection, who testify with reference thereto, then it would be error to refuse to permit the opposite side to examine him by its physicians for the purpose of controverting the result of the examination as testified to by his own witnesses; and for this purpose, if it is made to appear that such examination cannot be made by the opposing witnesses in the presence of the jury, it would be the duty of the court to permit them to make such examination apart from the jury. This case, however, did not come within this rule.

Society Proceedings

COMING MEETINGS

American Academy of Ophth. and Oto-Laryn., Chicago, Oct. 5-7.
American Association of Railway Surgeons, Chicago, Oct. 13-15.
Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Idaho State Medical Association, Lewiston, Oct. 6-8.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
National Assn. for the Study of Pellagra, Columbia, S. C., Oct. 21-22.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Vermont State Medical Society, Burlington, Oct. 14-15.
Virginia State Medical Society, Richmond, Oct. 26-28.
Wisconsin State Medical Society, Milwaukee, Oct. 6-8.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS

Twenty-Eighth Annual Meeting held at Pittsburgh, Sept. 14-16, 1915

The President, Dr. Charles L. Bonifield, Cincinnati, in the Chair.

Local Anesthesia in Herniotomy

Dr. J. H. Jacobson, Toledo, Ohio: Among 124 operations done by me there have been no deaths. My experience with this method has convinced me that whenever possible, such operations should be performed under local anesthesia. The only exception to this rule should be in herniotomy in children and when the operation must be performed in uncontrollable nervous adults. In only three of the operations was it necessary to complete the operation with a slight amount of ether. These were among the earlier operations.

I have never observed the slightest toxic effect from the use of the 0.5 per cent. novocain and epinephrin solutions which I have employed for these operations.

DISCUSSION

Dr. John W. Keefe, Providence, R. I.: My experience is in accord with that of the essayist. Most of the operations for inguinal hernia can and should be done under local anesthesia.

Dr. Albert Vander Veer, Albany, N. Y.: A hernia operation should not be undertaken in children under local anesthesia. A general anesthetic is best for that purpose.

Dr. William H. Humiston, Cleveland: In following an exclusive method of anesthesia, one is inclined to make every case submit to that form of anesthesia, and in my early work I soon found out that this is poor judgment. We must select our cases.

Case of Intestinal Obstruction and Volvulus

Dr. Rufus B. Hall, Cincinnati: This case of intestinal obstruction and volvulus was caused by a large gallstone. The profession generally does not regard gallstones in which the patient is not a great sufferer as a surgical condition. These patients are treated by physicians, with very indefinite results, so far as any permanent relief is concerned, the symptoms being variously described by such vague terms as indigestion, neuralgia, gastritis, etc. They are surgical cases and I recommend exploratory operation in all those chronic cases in which there is a clear past history of one or more acute attacks. In those cases in which the stone, through ulceration, passes into the bowel, the patient is subjected to great danger, even if he does survive. When intestinal obstruction occurs, it is so many years after the acute attack that the real cause is not recognized until revealed at the operation or necropsy. The long history of gallstone is ignored or forgotten.

DISCUSSION

Dr. Hugo O. Pantzer, Indianapolis: The first case of this kind was reported by Dr. Elsner, of Rochester, N. Y., about twenty years ago. There was a history of gallbladder trouble attended by attacks of acute obstruction. In each of the attacks, a different part of the abdomen appeared to be the seat of obstruction. Finally, the stone was passed per rectum.

Dr. Gordon K. Dickinson, Jersey City, N. J.: If 30 per cent. is our accurate diagnostic average in the abdomen, then operation should be done promptly, and more on suspicion than on an accurate diagnosis, more on opinion that something is wrong than to wait until we feel that something is positively and surgically bad. In going over my cases I find that death in many of them was due to dilatation of the right side of the heart, which comes on quickly after an abdominal operation, partly due to the anesthetic, and partly due to the condition of the heart before operation.

Dr. J. Henry Carstens, Detroit, Mich.: We do not perform these operations early enough. If we can make a diagnosis and resort to an exploratory operation promptly, we would not have so many of these cases terminate fatally.

Dr. Magnus A. Tate, Cincinnati: Five years ago I saw a woman, 60 years of age, who had been complaining of progressive pain and tenderness for a number of years. One day she was taken with severe continuous vomiting, and the abdomen was distended. She refused to undergo an operation. Later she was operated on, and a stone, 2½ inches in size, was found in the intestine, about 6 inches from the gallbladder. The intestine was gangrenous and ready to burst. In making the resection a portion of the contents escaped into the abdominal cavity. The patient went into a state of collapse and died about three hours after the operation.

Dr. John F. Erdmann, New York: I have had five cases of intestinal obstruction from gallstone in the past ten years, and of this number four patients died. Strange to say, the recovery was in a woman 72 years of age on whom I did an enterostomy and appendectomy. She also had a large tumor of the right ovary which was mistaken for an appendicitis.

Dr. Herman E. Hayd, Buffalo: I recall a patient, a woman, 79 years of age, who had practically no symptoms. So far as the passage of a stone is concerned, she never had an attack of violent pain, and yet the stone found was as large as a small hen's egg. I was called to see her when she was having fecal vomiting. She vomited for two days. I operated, removed the stone, and she lived five days after the operation. There was no history of ulceration or of an inflammatory attack. The stone was found in the bowel and the symptoms were those of intestinal obstruction.

Dr. Albert Vander Veer, Albany, N. Y.: A patient whom I had attended some fifteen years previously was taken very ill and had what we supposed was an acute jaundice. He recovered from this attack and lived fifteen years afterward in good health. At the time of death, I was allowed to make a necropsy. We suspected he had some malignant disease of the intestinal tract. I found a direct communication between the neck of the gallbladder and the beginning of the transverse colon. I believe this man in his previous illness had passed through a form of sickness that had resulted in relieving the gallbladder of gallstones, and they had passed out through the large intestine. The fistulous tract gave him no great inconvenience.

Dr. Charles L. Ill, Newark, N. J.: In forty patients operated on by my brother and myself we found three large gallstones in the small intestine. In one case we found a mass between the small intestine and the gallbladder. Three large gallstones were passed through ulceration into the intestine, caused obstruction, and killed the patients.

Dr. D. Todd Gilliam, Columbus, Ohio: When we speak of being unable to find a gallstone or gallstones near the lower part of the ileum, there is reason for it. The upper part of the intestinal canal is larger in caliber than the lower, and a gallstone will pass down pretty well toward the entrance of the ileocecal region before it becomes arrested, and the lower part of the ileum is less distensible than the upper part. Whenever we find great distention of the abdomen along with obstruction, it should always remind us of gallstones.

Dr. John Norval Bell, Detroit: A woman, 67 years of age who had never had any pain, but simply heaviness and fulness, had a palpable tumor of good size. It was hard to determine its nature. On opening the abdomen I found it was a large thickened gallbladder full of stones.

Dr. William Edward Darnall, Atlantic City, N. J.: I recall a patient I saw a year or two ago on whom I operated after the diagnosis of appendicitis with all of its symptoms, and I found a small collection of pus and in it a stone (undoubtedly an enterolith) about the size of a goose egg. It was about one-eighth of an inch thick, with a hard shell of calcium salts. Such accumulations of bile salts under some circumstances go on to form a full gallstone.

Cholecystectomy Versus Cholecystostomy

DR. L. W. SWOPE, Pittsburgh: No absolute rule can be laid down to guide one in determining when cholecystectomy is preferable to cholecystostomy, yet there should be some way of ascertaining why the percentage of cures is higher after removal of the gallbladder than after draining. From the former cases in the patients who survived operation and answered my inquiries I get a report of 96.8 per cent. cures, and the remainder suffer from symptoms probably indicating associated gastric or pancreatic disease. On the other hand, in cholecystostomy, there were only 74.8 per cent. of cures, the remainder being no better and many of them worse than before operation. In considering the latter it is, of course, true that in many of them the disease was so advanced and adhesions so extensive that removal of the gallbladder was out of the question because of the high mortality in such cases. There are still a large number in which it seems to be reasonable to suppose that better permanent results would have been obtained by removal of the gallbladder instead of drainage. This argument receives verification in the results obtained in the two-stage operation where for some reason we decided to drain the gallbladder at the first operation and remove it from four to eight weeks later. The dangers of cholecystectomy include the possibility of injuring the ducts, vessels and surrounding viscera from the manipulations necessary to free the adhesions. When adhesions are so extensive that the removal of the gallbladder would be attended with marked traumatism and leave large areas of raw surfaces to be covered, then because the primary mortality is so high and the hope that subsequent complications will not arise is so uncertain, I believe better results are obtained by drainage of the gallbladder. While a diseased gallbladder, like a diseased appendix, should always be removed when possible, still there are exceptions. Because primary removal of the gallbladder opens up so many tracts for the possible extension of infection, and because experience has shown that occasionally a patient does die from acute sepsis in infections of this kind, I am convinced that such a gallbladder should be drained with as little manipulation as possible. Then at the end of from four to eight weeks, if recovery is comparatively complete, the gallbladder should be removed, as these patients are the ones who are left with a chronic infection which advances so insidiously that years may elapse before a return of symptoms, but when they do return the involvement of the upper abdomen is frequently too extensive to permit complete removal and ultimate cure. These cases also offer favorable sites for subsequent malignant degeneration. In advocating cholecystostomy in infective cases I do not include hydrops and chronic empyema of the gallbladder in a quiescent state, as cholecystectomy is safer when the infection has ceased to be active.

DISCUSSION

DR. JOHN F. ERDMANN, New York: As to cholecystectomy versus cholecystostomy, activity, efficiency and morbidity are the things we should consider in order to reduce the mortality to the lowest point. Anything that would increase efficiency must of necessity decrease morbidity, and cholecystectomy without any question limits morbidity and increases efficiency. As a result of my statistics I have been doing cholecystectomy practically in every case. There are some cases, however, in which we must do cholecystostomy.

DR. C. S. FOSTER, Pittsburgh: There is an indication for removing gallbladders that cause no symptoms. For instance, if we suspect the ducts to be enlarged and the glands enlarged down along the ducts, independently of pancreatic disease or of involvement of the viscera of the stomach, such a gallbladder is infected and ought to be taken out.

DR. JOHN W. KEEFE, Providence, R. I.: We ought not to operate during the acute stage of inflammation in gallbladder disease. Occasionally, we will have perforation and gangrene, and there will be a few cases in which it is necessary to operate during that period, but if one can keep away from operation and wait until convalescence is established, he will meet with greater success when he does operate.

DR. FRANCIS REDER, St. Louis, Mo.: With regard to feeding a patient deprived of bile salts on ox-gall, if you are reasonably certain that the patient's bile is in a normal condition you can feed that patient with his own bile by simply making him drink it.

Unusual Contents (Kidney) of Inguinal Hernia

DR. CHARLES W. MOOTS, Toledo, Ohio: A woman, aged 38, had never suffered any illness necessitating her remaining in bed. About nine years ago she noticed a lump the size of a hickory nut in the region of the right internal abdominal ring. It remained about the same for eight years, when it came lower and appeared to double in size. At this time it also became very painful. Operation was performed Aug. 22, 1914, under local anesthesia. I made the usual skin incision and then found that the mass could not be pushed upward into the inguinal canal as it was adherent to the labium majus. An elliptical portion of the labium majus was excised in order to free the mass, which now gave me the impression that I was dealing with a kidney. However, it being almost beyond the point of identification, an opening was made in the peritoneum, when the right kidney space was explored and found empty. The left kidney was normal in size, location and consistence. A nephrectomy of the useless right kidney was done and the inguinal canal closed in the usual manner. The kidney was composed of a mass of small cysts about one-half inch in diameter.

A Prognostic Sign in Acute Suppurative Peritonitis

DR. HUGO O. PANTZER, Indianapolis: The presence within the abdomen in cases of peritonitis of a free or encaps lated serous or seropurulent fluid, which is practically wit out odor, by the side of encapsulated foul material, ind cates a strong systemic defensive activity of distinct prog nostic value. A male baby, 6 months of age, had becom acutely ill and at once revealed the characteristic signs an symptoms of an acute general peritonitis of probable appendi ceal origin. The temperature was 104 F., pulse feebl and 170 to the minute. At operation there was foun much free fluid within the abdomen, cloudy with pus, b odorless; and about the ileocecal coil were extensive adhe sions enclosing an abscess containing about 45 c.c. of cream and extremely foul pus, and the gangrenous appendix. Th case seemed utterly hopeless, yet it turned straightway t recovery. With three drainage tubes within the abdome the very next day the child was found cooing merrily an taking its mother's milk, and from that time on it bega to recover speedily.

Abnormality of Sigmoid

DR. BUDD VAN SWERINGEN, Fort Wayne, Ind.: A woma 37 years of age, had suffered from childhood with consti pation. Palpation of the abdomen elicited tenderness an tumefaction in both flanks. By the vagina a mass in th left side was felt to be very hard and larger than one on th right. The abdomen was opened. The omentum was firml adherent on the left side; a tubo-ovarian abscess on th right side was removed, also the appendix. In enucleat ing the left tube and ovary, which were very intimatel adherent to the sigmoid, there was uncovered a cylindrica structure about 6 inches long, apparently coming out of th side of the sigmoid and entering the lateral aspect of the rectum. After freeing it, it was thought to be a diverticulu open at one or both ends. As the main channel of the bowe was thought to be still uncovered the diverticulum wa ligated at the sigmoid and rectal attachments and removed Preliminary to closure of the abdomen water was run int the rectum. The sigmoid and descending colon could n be filled. We had evidently destroyed the only passage between the rectum and colon. We therefore anastomo the rectum and sigmoid by the Noble method at the site the former channel. The woman made a satisfactor prolonged convalescence, and went home with a fecal fistula for which she was successfully operated May 11, 1915.

Mesenteric Thrombosis; Report of Two Cases

Dr. William Edgar Darnall, Atlantic City, N. J.: Infection plays a decidedly more important part in the etiology of mesenteric thromboses than we have thought in the past. Cases of acute mesenteric thrombosis are the result largely of some focus of infection, such as appendicitis, gallbladder infection, ulceration of the intestine or even of metastasis from a more distant focus. The superior mesenteric artery is most often the seat of the trouble. Any other treatment than operative need not be considered. Resection of the involved intestine is usually done, but many patients have been lost who possibly might have recovered if the anastomosis had been delayed and a secondary operation done later. The reason for this is that one cannot be certain that the gangrene has reached its limit and will not extend farther and that the complete operation is apt to involve more time and trauma than the patient can stand. These patients are usually in bad condition when they come for operation. It is therefore better that the gangrenous portion of the intestine should be brought well out of the incision, leaving full liberal margins at both ends. The intestine should be resected and its ends sewed into the wound, which is walled off with gauze. With both ends of the intestine thus opened, distention may be relieved and signs of further extension of the gangrenous process watched. At a later day, if the patient survives, the fistula may be closed and an anastomosis done.

President's Address; Some Comments on Present Day Tendencies in Gynecologic and Obstetric Practice

Dr. Charles L. Bonifield, Cincinnati: One method of diagnosis strongly recommended by some operators in recent years seems to me to be seldom needed. I refer to the opening of the uterus. The greater one's familiarity with intra-abdominal conditions the less frequently he finds it necessary to do an exploratory abdominal section. Hysterotomy will find more frequent employment in the hands of the general surgeon who has broadened his field to include gynecology than in the hands of a gynecologist who has studied at the feet of a master of the art. It is from the laboratory rather than from the operating room that further success in dealing with cancer is to be expected. The importance of early diagnosis and operation is thoroughly recognized by the surgeon, if not by the laity, and the radical and painstaking operations now performed have merely reached the limit as to thoroughness. Further experience with radium has pretty well demonstrated the position it should occupy in cancer therapy. The surgical treatment of uterine fibroids in the hands of an operator skilled in pelvic surgery is now so successful and satisfactory that any other form of treatment will have to show brilliant results to supplant it. As to the administration of anesthetics, I prefer my anesthetics to be given by some one whose knowledge of anatomy, physiology and therapeutics enables him to meet emergencies that may arise without much direction or supervision on my part. The professional anesthetist is a useful member of the profession, but naturally likes to magnify his calling, so he provides himself with expensive and complicated apparatus that makes the operating room look like the inside of a submarine. I do not claim that nitrous oxid is not a useful agent, and that there are cases in which it is preferable to either ether or chloroform, but I do claim that it has not been proved that gas is safer than ether as the routine anesthetic for major surgical operations.

Luteum Extract in the Treatment of Menstrual Disorders

Dr. Adam P. Leighton, Jr., Portland, Me.: There are cases of dysmenorrhea in which the main causal factor is deficient action of the natural corpus luteum. I am not carried away with the idea that the therapy of corpus luteum is a cure-all in any sense of the word. On the other hand, the cases which may be traced to ovarian deficiency are probably in the distinct minority. One must not allow himself to be so impressed with the etiologic value of some one factor in the cause of disease that he forgets or becomes indifferent to others of equal importance. Surgery is necessarily indicated in those cases in which we find pelvic pathologic conditions or anatomic abnormalities present, which we are wont to consider as probable causes of this disorder. There are some serious drawbacks to the use of corpus luteum. It generally must be used routinely or continuously to obtain and maintain results. Its action is not immediate, it is cumulative, and for that reason patients and we ourselves too often discard its use after a short trial, if it has been unproductive of good results. From 15 to 30 grains a day, seldom more, is sufficient in any case. Its prolonged administration has not brought about any untoward symptoms, with the possible exception of slight gastric disturbance in one or two instances. The subject of organotherapy, in its present experimental state, is rather involved and indefinite, and while it is sometimes difficult to recognize and identify cases which would be benefited by corpus luteum, yet when there is a possibility of ovarian deficiency being an etiologic factor in any gynecologic disorder, we owe it to the patient to make use of this remedial agency, for its value is well determined.

Present Status of Twilight Sleep in Obsterics

Dr. A. J. Rongy, New York: Judging from my experience extending over a period of fifteen months, and covering a series of over 350 cases, I feel that the value of the treatment and its acceptance, as a recognized therapeutic measure, will depend on our interpretation of the physiologic processes which are produced by these drugs. If we accept the theory that the semiconsciousness induced prevents the actual experience of pain, although apparently present in all its clinical phases, then labor must be considered painless, and therefore to refuse to adopt it would be a failure on our part to carry out the trust reposed within us. On the other hand, if the mental state induced does not actually prevent the sensation of pain and the patient is actually suffering, even though it be modified, then the value of this method will devolve on the degree of pain, diminution or analgesia, and not on the lack of recollection of pain or amnesia. I find it difficult to reconcile the fact that a patient, displaying all clinical evidences of pain, such as crying and groaning, as is observed in these patients, does not actually experience it. However, I am fully convinced that pain, in a goodly proportion of cases, is influenced to a degree that would warrant its adoption in selected cases, more particularly in the primiparas of the highly emotional type and in multiparas in whom we anticipate long and tedious labors.

The Teaching of Obstetrics

Dr. Charles Edward Ziegler, Pittsburgh: I would not overemphasize the importance of didactic teaching in obstetrics. It is basic and indispensable. It must in part precede and in part accompany clinical teaching, but can never take its place, as has too long been attempted. In times past obstetrics was taught very largely didactically and in certain quarters this is still the case. Even at present in all but a few medical schools in this country, the clinical teaching and practical experience given undergraduate students in obstetrics are wofully deficient. Both the teaching and practice of obstetrics are generally regarded as the poorest of all the clinical branches of medicine. There must be a reason for this. The lay public will continue to regard with indifference all pleas for the improvement in the teaching of the practice of obstetrics so long as more than 50 per cent. of confinements are in the hands of ignorant, nonmedical persons, who, as a class, are regarded as capable of doing the work satisfactorily, even by physicians, among whom are certain well-known professors of obstetrics. The teaching of the clinical or practical side of obstetrics can be accomplished satisfactorily only through the medium of suitably equipped and properly conducted hospitals and dispensaries. Such hospitals and dispensaries should be teaching and research institutions in the fullest and broadest sense of the terms, with a large amount of obstetric material freely and constantly available for the purpose. The teaching staff, and there should be no other, should consist of full-time workers only, who should be paid salaries sufficiently large to make them independent of all other work. To become a thoroughly trained obstetrician, the graduate student must spend a number of years as assistant and teacher in maternity hospital and dispensary services of the type described. The major part of undergraduate instruction should be given by graduate students for this very purpose. The teaching helps them immeasurably. It gives them assurance, makes them alert, teaches them the invaluable art of expression, and develops clean-cut ideals and thoroughgoing, accurate procedure. Laboratory studies and research should constitute an indispensable part of all graduate study in obstetrics, not alone for the knowledge which the student acquires and for what he adds to the knowledge of the subject, but most especially because of the habit of investigation acquired thereby, which will make him fruitful in research later and prevent him the more certainly from degenerating into a mere money maker.

The Combined Operation for the Interruption of Pregnancy and Sterilization

Dr. Palmer Findley, Omaha: The combination of abdominal hysterectomy and resection of the fallopian tubes is the procedure of choice in all cases not previously infected. The removal of the ovum through an abdominal incision should be reserved for those cases in which permanent sterilization is desired. No other method is so free from the dangers of sepsis, retained secundines, perforation of the uterus and excessive loss of blood. In point of safety, expediency and efficiency, the procedure will appeal to all abdominal surgeons.

Surgical Operations During the Pregnant State

Dr. Francis Reder, St. Louis: A woman expecting to become pregnant should be thoroughy examined for any physical defect that might be found. Such a defect should be corrected, if possible, before pregnancy takes place. No operation that can be deferred should be performed on a pregnant woman. Any operation that will contribute to the safety of a pregnant woman should be performed without hesitancy.

Menstrual Statistics Based on a Study of 4,500 Menstrual Histories

Dr. K. I. Sanes, Pittsburgh: Seventy-five per cent. of women menstruated regularly and 25 per cent. irregularly. The most common regular type met with was that of twenty-eight days, which constituted 72 per cent. of this type. The thirty-day type followed next in frequency with only 3.8 per cent. and the twenty-one-day with 3.3 per cent., etc. In some of the thirty-one-day type the menstrual flow appeared monthly on the same date independent of the number of days in the month. The most common irregular types were from three to four weeks, then from four to five weeks, two to three weeks, five to six weeks, etc. The most common ages of onset in order of their frequency were 15, 12, 16. The age of onset did not show any relation to regularity or irregularity of menstruation. The earliest age of onset in our series was 9 years and the latest 24 years. The most common duration of menstrual flow was three days, then four or five days, three or four days, five days, seven days and four days. The irregular type of menstruation showed a larger percentage of long durations and smaller percentage of shorter durations than the regular type. The quantity of flow in 45 per cent. of women was normal, in 17 per cent. scant and in 37 per cent. profuse. Irregular patients showed a higher percentage of profuse flow than the regular ones. Hyperthyroidism cases showed a high percentage of profuse menstrual flow (65 per cent.). Clots were very frequently found in menstrual flow and we did not find them to be influenced by menstrual irregularity. Forty-seven and four-tenths per cent. of women suffered from dysmenorrhea (if the term dysmenorrhea is to convey the idea of discomfort). In retrodisplacements the percentage was found to be 50.4 per cent. In 50 per cent. of the dysmenorrhea cases the symptoms appeared during the flow, in 29 per cent. before, in 17 per cent. before and after, and in the rest after the flow or during and after. Most frequently the dysmenorrhea appeared the day before the flow, then the first day of the flow, then two days during, two days before, one day before and two days during, then three days before, and seven days before. Improvement in menstruation was frequently noticed with advance of menstrual life, after marriage and after childbirths, menstrual periods becoming more regular and the dysmenorrhea improving or disappearing entirely. The most common ages of menopause in order of their frequency were given as 50, 46, 48, 47, 51, 49, 44, 45, 52. The length of menstrual life was most commonly given as thirty-seven years, then thirty-five and thirty-three. Sixty-eight per cent. reported a menstrual life of thirty years or more. The very early and very late ages of puberty showed a rather early menopause.

Spinal Anesthesia in Gynecologic Operations

Dr. R. R. Huggins, Pittsburgh: After an experience with spinal anesthesia covering a period of two years I am convinced that it is of great value and that it will eventually find a high place among the methods of anesthesia, particularly for surgical procedures in the lower abdomen and pelvic cavity. The time is not here, however, when it can be used indiscriminately and by those who are not familiar with the contraindications. It is highly important to know when not to use it. A keen appreciation of its dangers and the unfortunate sequelae which have thus far caused considerable prejudice against the method will enable us to avoid its use in certain instances in which they are liable to occur.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

September, V, No. 9, pp. 811-964

1 Degeneration of Life. W. J. V. Deacon.
2 Study of Methods of Sewage Disposal in Industrial and Rural Communities and Suggestions for Their Improvement. J. F. Siler, U. S. Army, P. E. Garrison, U. S. Navy, and W. J. MacNeal, New York.
3 Fate of Bacteria in Frozen Meat Held in Cold Storage and Its Bearing on Bacteriologic Standard for Condemnation. J. Weinzirl and E. B. Newton, Seattle.
4 Experiences with Refuse Collection and Disposal with Reference to Odors. S. A. Greeley, Chicago.
5 Wound and Skin Diphtheria as Public Health Problem. L. D. Bristol, University, N. D.
6 Proposed American Public Health Association Course of Study for Health Officials and Others Interested in Public Health Work. F. D. Bell, New York.
7 Accidents Following Vaccination. W. F. Elgin, Glenolden, Pa.
8 Protection and Maintenance of Public Health During and Subsequent to Great Conflagration. W. C. Hanson, Boston.
9 Bacteriologic Method for Determining Manural Pollution of Milk. J. Weinzirl and M. V. Veldee, Washington, D. C.
10 Uhlenhuth's Method for Sputum Examination, for Tubercle Bacilli. J. J. Kinyoun, Washington, D. C.
11 Bureaus of Water Supplies. E. Bartow, Urbana, Ill.
12 Danger to Laundry Workers of Infection from Handling Soiled Linen. E. A. Dederer.
13 Municipal Health Officers and Venereal Disease. W. A. Evans, Chicago.
14 Portable Air Sampling Apparatus for Collection of Large Volumes. E. W. Brown, U. S. Navy.
15 Refuse Disposal in Southern Cities with Particular Reference to Savannah, Ga., and Its New Incinerator. E. R. Conant, Savannah, Ga.
16 Report of Committee on Water Supplies of Sanitary Engineering Section. F. F. Longley.

Archives of Internal Medicine, Chicago

September, XVI, No. 3, pp. 341-508

17 *Transient Auriculoventricular Dissociation with Varying Ventricular Complexes Caused by Digitalis. H. A. Christian, Boston.
18 *Inactivation of Pepsin by Sodium Chlorid; Its Clinical Significance. W. W. Hamburger, Chicago.
19 *Endemic Typhus in Philippine Islands. G. B. Foster, Jr., Washington, D. C.
20 *Study of Infantile Tetany; Report of Case. A. Fletcher, Toronto
21 *Simple Method (Indicator-Phenolsulphonephthalein) for Determining Variations in Hydrogen-Ion Concentration of Blood. R. L. Levy, L. G. Rowntree and W. M. Marriott, Baltimore
22 Roentgenologic Determination of Gastric Motility. R. D. Carman and A. Miller, Rochester, Minn.
23 *Urobilin in Stool in Pernicious Anemia as Influenced by Splenectomy, Transfusion and Salvarsan. O. H. Robertson, Boston

24 *Metabolism Studies Before and After Splenectomy in Congenital Hemolytic Icterus. S. Goldschmidt and O. H. P. Pepper, and R. M. Pearce, Philadelphia.
25 *Effect of Hemorrhage and of Occlusion of Carotid Arteries on Vasomotor Irritability. R. G. Hoskins, W. N. Rowley and C. Rosser, Chicago.
26 *Studies in Diphtheroids. H. Fox, Philadelphia.
27 *Diminished Power of Nephritic Kidney for Eliminating Uric Acid as Exemplified by Use of Atophan. M. S. Fine and A. F. Chace, New York.
28 Chronic Meningococcus Septicemia Associated with Pulmonary Tuberculosis. H. A. Bray, Ray Brook, N. Y.
29 *Treatment of Cystinuria; Report of Case. W. G. Smillie, Boston.

17. **Auriculoventricular Dissociation.**—As an occasional result of digitalis administration, there develops, says Christian, a cardiac disturbance consisting of variations in the form of succeeding ventricular complexes. Of the cases, one reported by Cohn, one by Oppenheimer and Williams and four by Christian, all except possibly one of the author's cases showed auriculoventricular dissociation. In one case the curve obtained did not justify any statement as to auricular activity; there may have been a regular rate in the auricles with auriculoventricular dissociation. All cases were of the type of chronic myocarditis without any marked signs of valve lesions.

18. **Inactivation of Pepsin by Sodium Chlorid.**—Hamburger summarizes his paper as follows: Sodium chlorid will prevent pepsin in aqueous solution from digesting protein. The inhibition of pepsin by sodium chlorid, together with the ability of animal serum to deviate pepsin (described in an earlier paper), is responsible for most, if not all, of the published accounts of antipepsin. The inhibition of pepsin by sodium chlorid is permanent, the inactivated ferment failing of reactivation by the subsequent addition of hydrochloric acid. The inactivation may be prevented, however, by dissolving the ferment in dilute hydrochloric acid. Neutralization of pepsin dissolved in hydrochloric acid alone (without the addition of sodium chlorid) inhibits the ferment by the sodium chlorid formed from union of alkali and acid, acting in a neutral solution. Complete neutralization of the gastric juice causes similar pepsin inactivation. The inactivation of pepsin by complete and continuous neutralization of gastric juice is indicated in the treatment of various diseases of the stomach in which temporary inhibition of peptic digestion is desired. This is particularly true in the prevention and cure of chronic gastric ulcer. By the use of certain foods, methods and time of feeding, and various alkaline substances, complete and continuous neutralization can be obtained.

19. **Endemic Typhus.**—Foster's observations are based on a study of twenty-three cases occurring among Filipinos. The first case was erroneously diagnosed as malaria. Tentative clinical diagnoses of typhus were made by elimination; but, in the absence of confirmatory laboratory evidence, the first positive diagnosis was not made until Oct. 12, 1914. The disease observed here corresponds to the acute infectious disease described by Brill, but the period of incubation appeared longer, the average leukocyte count was less and marked nervous manifestations—absent in Brill's cases—were not uncommon in Foster's cases. The onset was characterized by chill in twenty-one cases, headache in nineteen and by vomiting in six. Lumbar pain and pains in the extremities occurred in eight cases and vertigo was recorded once. In two of the cases the onset was gradual and fever was the first symptom noted. There was intense pain in the chest in one case at the onset, probably due to pulmonary congestion. The facies at the onset was that of intense congestion. The expression in some cases was anxious and in others dull and stupid. The color remained good until the crisis, after which pallor was evident for a variable time and the patient exhibited a "washed out" appearance.

The temperature rose rapidly during the stage of invasion, reaching the fastigium on the second to the sixth day. The average fastigium in twenty-one cases was 103.5 F., the lowest 102 F. and the highest 104.6 F. The fastigium was reached on the third or fourth day in 50 per cent. of the cases. The eruption occurred in sixteen cases, was absent in two cases and in the remaining five cases was either absent or overlooked. It appeared on the fifth day in two thirds of the cases but in isolated cases it was observed as early as the fourth day and as late as the eighth day. It appeared first on the abdomen and chest and developing rapidly and not in crops, had extended to the back, shoulders, arms, hands, legs and feet and in two cases to the face, within twenty-four hours. The lesions were discrete, slightly raised, rose red to dark red, irregular in outline and measured from 2 to 8 mm. in diameter. In the average case the spots were much more profuse than the rose spots of typhoid and less numerous than the lesions in the average case of measles. The eruption faded rapidly with the crisis and had disappeared by the tenth day. Desquamation did not occur.

The blood showed certain constant changes. The leukocyte count, in sixteen cases, varied from 4,000 to 18,000, the average count being 7,865. Differential leukocyte counts showed a rather consistent increase in the percentage of large mononuclear cells, with a corresponding decrease in the number of polymorphonuclears. Eosinophils were not present in appreciable numbers during the febrile period. Blood cultures in fifteen cases gave negative results. The pulse exhibited no characteristic features. The heart showed no variations from the normal except in one case. A soft blowing systolic murmur was audible in this case following the crisis. Anorexia developed early and persisted throughout the febrile period. Epistaxis, so constant a feature in typhoid, occurred but twice. Signs referable to the nervous system were common, and it appeared to stand the brunt of the infection. Retention of urine occurred rather persistently in one case, necessitating frequent catheterization. Polyuria was an almost invariable concomitant of the crisis. A relapse, intercurrent in character, occurred in one case. One death, due to acute ulcerative endocarditis following the crisis, occurred in the series of twenty-three cases, establishing a death rate of 4.34 per cent.

20. **Infantile Tetany.**—Fletcher holds that clinical observation would not warrant the conclusion that calcium changes alone account for the nerve irritability in tetany, but would seem to support the hypothesis that the tetany results from a disturbance of the concentration equilibrium of the salts. Such salt changes are probably associated with gastro-intestinal disturbances and decreased activity of the kidney, and, as improvement in the function of these two systems occurs, restoration of the normal salt equilibrium ensues. Treatment, accordingly, from these indications should aim at restoring a normal digestion and increasing the activity of the kidney.

21. **Hydrogen-Ion Concentration of Blood.**—The indicator method of determining H-ion concentration is made applicable to blood and serum by the authors by utilization of dialysis through a collodion membrane, which excludes the disturbing influences of color and of proteins. The method is simple, accurate, rapid and well adapted for clinical use. The technic consists of dialyzing 3 c.c. of blood or serum at room temperature against 3 c.c. of 0.8 per cent. salt solution for five minutes, adding an indicator and comparing with colored standard phosphate mixtures of known H-ion concentration. Phenolsulphonephthalein is employed as the indicator in this method. It is found to exhibit easily distinguishable variations in quality of color, with minute differences in H-ion concentration between the limits pH6.4 and pH8.4. Oxalated blood from normal individuals gives a dialysate with a pH varying from 7.4 to 7.6, while that of serum ranges from 7.6 to 7.8. Variations from these figures toward the acid side were encountered only in conditions which clinically, and from the standpoint of the laboratory findings, evidenced an acidosis. In a small series of clinical acidoses, the serums varied from 7.55 to 7.2 and the oxalated blood from 7.3 to 7.1. In experimental acidosis in dogs, a pH of 6.9 has been encountered in both serum and blood just before death.

23. **Urobilin in Stool in Pernicious Anemia.**—In six cases of pernicious anemia with splenectomy, examined by Robertson, the urobilin output which had previously been high, showed a marked decrease immediately after operation. In two cases in which the urobilin later returned to a high

figure, as well as one case in which there was a persistently increased output, showed definitely less improvement than the two cases in which the urobilin remained normal. Three of the four patients transfused gave evidence of a resulting bone marrow stimulation and at the same time showed a temporary increase in urobilin excretion. The one case in which transfusion was without effect showed no such increase. In three patients treated with salvarsan, there was practically no effect, either on the course of the disease or on the urobilin excretion. It seems fair to Robertson to conclude that: 1. Variations in the urobilin output may be taken as an index of corresponding changes in the course of the disease. 2. Such variations in the urobilin may occur before there is any change in the number of red cells. 3. The determination of the urobilin output as an index of blood destruction is the most accurate means we have of estimating the effect of treatment.

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Boston Medical and Surgical Journal

September 16, CLXXIII, No. 12, pp. 413-450

35 Surgical Experiences in France. W. J. Mixter, Boston.
36 *Common Shoulder Injuries. E. H. Risley, Boston.
37 Technic of Transfusion by Means of Glass Tubes. A. R. Kimpton and J. H. Brown, Boston.
38 *Use of Schick Test in Children's Institution. H. Linenthal and S. H. Rubin, Boston.
39 Case of Anterior Poliomyelitis with Multiple Paralyses, Including Hitherto Unrecorded Involvement of Left Diaphragm. P. H. Sylvester, Newton.
40 *Auricular Fibrillation and Complete Heart Block. P. D. White, Boston.
41 Suction and Irrigation Apparatus for Diagnosis and Treatment of Antrum of Highmore. J. Prenn, Boston.
42 *New Method of Treating Flat-Foot. P. B. Howard, Newtonville.

36. **Common Shoulder Injuries.**—Emphasis is laid by Risley on the following points: Diagnosis in shoulder injuries is not made by clear cut signs and symptoms, but only in a careful process of exclusion and roentgenoscopy in every case. The Roentgen ray is of the utmost importance in every case as it often reveals the underlying cause of a persistent bursitis to be some of the frequent lesions of the greater tuberosity or acromion, which are often overlooked unless especial search is made for them. About 60 per cent. of subacromial bursitis cases are of the occupational type. The remaining 40 per cent. have as an underlying cause in the great majority of cases, some lesion of the greater tuberosity or acromion. The diagnosis of ruptured supraspinatus tendon should not be made until at least three months of nonimprovement have elapsed.

Cases of long standing bursitis with adhesions give a picture identical with that of ruptured supraspinatus tendon and give extremely satisfactory results from operation. Calcareous deposits in the subacromial bursa may be spontaneously absorbed. The term "insertion fracture" should be substituted for the nondescriptive term of "sprain fracture." Occupational neurosis per se does not exist in the shoulder joint. Injuries to the brachial plexus are rare. The percentage of patients benefited will be greatly increased by early exploratory operation. Slight injuries to the greater tuberosity and acromion process and arthritis of the acromioclavicular joint are of far greater importance than is generally supposed in prolonging disability after shoulder injuries. Risley lays especial emphasis on the importance of these seemingly trivial injuries to the shoulder joint as factors to be considered in diagnosis, prognosis and treatment.

38. **Schick Test in Children.**—Of 126 children, ranging in age from 5 to 16 years, Linenthal and Rubin found thirty-six susceptible to diphtheria and ninety immune. Antitoxin of 750 units administered to the nonimmune produced an immunity which did not last over four weeks in 50 per cent. in several as long as eight weeks, and in six children the immunity conferred by the antitoxin persisted after five months. With the exception of the six children with the persistent antitoxin immunity and one child who gave negative reaction the first time and a positive the second time, the results of two tests, five months apart, were uniform. The authors regard the test as of great value in determining susceptibility to the disease and thus serves as a guide to determine in the event of exposure to diphtheria, who should and who should not receive prophylactic doses of antitoxin. Persons naturally immune will thus be saved the annoyance and the possible disagreeable results apt to follow the injection of horse serum.

40. **Auricular Fibrillation and Complete Heart Block.**—White cites the case of a patient showing heart block and auricular fibrillation whose heart rate rose from 27 with complete block, to 47 with partial block during the administration of digitalis and coincident with marked clinical improvement. The ventricular complexes of the electrocardiogram changed in character simultaneously with the decrease in the degree of block, the change in the R suggesting a more normal conduction in the ventricle. The spontaneous return to a complete block was accompanied by a continuation of the patient's good health. The block was not vagal in origin, atropin having no influence on it.

42. **Method of Treating Flat-Foot.**—After having trouble with his own right foot, Howard decided to try an experiment which would give support to the arch in all positions and free play to the muscles, at the same time being perfectly flexible and self-adjusting. Taking a cast of his foot he made a model and had a rubber factory make up several arch supports or shaped rubber bulbs filled with air. These he covered with leather and tried them out in his shoe with much satisfaction. In general the arch above conforms to the arch of the foot below, it fits the shoe, and on the inner side it is reinforced to prevent bulging. This is encased in leather, which is extended under the heel for an anchor, so to speak, and forward it tapers off just a little in front of the arch support. The support is made and encased in such a way that the air is held absolutely under the arch of the foot, and as the contour of the arch of the foot changes, the arch support changes also, still exerting on the arch of the foot the same upward pressure. It allows free muscular action all of the time as the foot is flexed or extended in locomotion.

Canadian Medical Association Journal, Toronto

August, V, No. 8, pp. 661-756

43 Pharmacology of Animal Extracts. V. E. Henderson, Toronto.
44 Organotherapy in Obstetric and Gynecologic Practice. B. P. Watson, Toronto.
45 Animal Extracts in Surgery. G. E. Wilson, Toronto.
46 Animal Extracts in Rhinology and Laryngology. D. J. G. Wishart, Toronto.
47 Animal Extracts in Ophthalmology. N. Jones, Toronto.
48 Syphilis of Heart and Aorta. A. McPhedran, Toronto.
49 Experimental Gastro-Enterostomy. F. A. C. Scrimger, E. Archibald and A. H. Pirie, Montreal.
50 Resumé of Evening Clinic for Diagnosis of Diseases of Chest at Boston City Hospital. S. W. Ellsworth, Quincy, Mass.
51 Series of Unusual Surgical Conditions. A. T. Bazin, Montreal.

Georgia Medical Association Journal, Augusta

August, V, No. 4, pp. 81-103

52 Need of Better Rural Sanitation. L. C. Allen, Hoschton.
53 Influence of School Life on Physical Child. T. Toepel, Atlanta.
54 Psychosis of Morphin and Alcohol; Was Medical Profession Prepared for Harrison Law? C. King, Atlanta.
55 Infected Tonsils. R. T. Dorsey, Atlanta.
56 My Experience with Pituitary Extract. H. Rawiszer, Omaha.
57 Treatment of Typhoid. F. Bird, Valdosta.

Illinois Medical Journal, Chicago

August, XXVIII, No. 2, pp. 81-160

58 Organization; Medical Defense; Contract Practice. A. L. Brittin, Athens.
59 Making of Milk Commission. J. W. VanDerslice, Oak Park.
60 Medical Inspection of Employees on Certified Farms. G. H. Campbell, Chicago.
61 Physician's Opportunity to Conserve Health of People. J. A. Robison, Chicago.
62 Cooperation in Public Health Work by Neighboring Small Cities. G. F. Ruediger, La Salle.
63 Present Practice Relating to City Wastes Collection and Disposal. P. Hansen, Urbana.
64 Some Reflections. E. W. Weis, Ottawa.
65 Operative Treatment of Pelvic Hernia. H. T. Byford, Chicago.
66 Comparative Roentgen Ray Work. E. M. Sala, Rock Island.
67 Keeping Child Normal. W. O. Krohn, Chicago.
68 Some Pressing Health Needs in Illinois. C. St.C. Drake, Springfield.
69 Some Infections of Head and Their Causes. J. S. Clark, Freeport.
70 Blood Pressure in General Practice. N. T. Stevens, Clifton.

Iowa State Medical Society Journal, Des Moines

August, V, No. 8, pp. 311-350

71 Morrow of Surgery. T. E. Powers, Clarinda.
72 Life Insurance and Physician. G. E. Crawford, Cedar Rapids.
73 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.
74 Tumors of Urinary Bladder. J. S. Eisenstaedt, Chicago.
75 Circumcision of Tonsil. F. G. Murphy, Mason City.

Journal of Infectious Diseases, Chicago

September, XVII, No. 2, pp. 277-436

76 *Environmental Studies of Streptococci with Special Reference to Fermentative Reactions. J. Broadhurst, Ithaca, N. Y.
77 Bacteriologic Study of Secondary Invaders in Hog-Cholera. F. Eberson, Ames, Ia.
78 Separation of Antibody Fractions in Hog-Cholera Serum. F. Eberson, Ames, Ia.

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with old tuberculin and the Wassermann antigen, the authors hold that the probabilities are that the patient is a leper. However, negative results with old tuberculin are not sufficient to exclude a diagnosis of leprosy. On this occasion they observed no case of leprosy that reacted positively only with old tuberculin.

85. **Ocular Lesions from Injection of Streptococci.**—As the outcome of a long series of experiments in which animals were injected intravenously under uniform conditions with streptococci from rheumatism, from appendicitis, from ulcer of the stomach, from cholecystitis, from erythema nodosum, from herpes zoster, from parotitis, from pyorrhea, from tonsils, and from dairy products, Rosenow has had opportunity to study the eye lesions in forty-eight animals. The lesions may be classified as follows: (1) unilateral panophthalmia in five instances (twice following injections of strains from rheumatism and herpes zoster as isolated, and once in each case after one animal passage, and once in a rabbit injected with a streptococcus mucosus from the eyeball in a case of metastatic panophthalmia following tonsillitis and otitis media); (2) hemorrhages in the limbus, with or without episcleritis, in fourteen instances (four times following injection of laboratory strains after they had attained a certain grade of virulence, three times with rheumatic strains, twice with strains from appendicitis, twice with strains from herpes zoster and once each with strains from erythema nodosum, myositis and from butter); (3) iritis or iridocyclitis nine times (four times after injection of certain laboratory strains, three times with rheumatic strains, and twice following injection of streptococci from small pus pockets in tonsils of otherwise normal individuals); (4) conjunctivitis, usually bilateral, occurring frequently, in ten instances associated with the streptococci injected (once each with streptococci from appendicitis, herpes zoster and rheumatism, once with streptococci from butter, once with streptococci from the pus pocket in the tonsil of a cow, twice after injection of a laboratory strain, and three times after injection of strains from pus pockets in tonsils from approximately 100 individuals); (5) ulcer of the cornea due to the organism injected, observed only once, after injection of a strain of streptococcus from the muscle in calcifying myositis in a man. Lesions similar to these occurred with or without herpes in twelve animals injected with the strains from herpes zoster. Herpes of the conjunctiva followed injections or streptococcus from the tonsil in ulcer of the stomach in a cow. Hemorrhages in the retina were not often looked for, but were found in two instances.

86. **Production of Antibodies after Removal of Organs.**—In the dog complete removal of the stomach, of the small intestine, or of the thyroid according to the observations made by Hektoen and Curtis does not interfere with the development of the agglutinin and opsonin for rat corpuscles after intravenous injection of rat blood. Pancreatectomy, complicated by intussusception and by rabies, resulted in a diminution in the amount of antibodies that accumulated in the blood. Simultaneous removal of spleen and of pancreas appears to have about the same depressing effect on antibody production in dogs as removal of the spleen only. Removal of the small intestine and ligation of the mesenteric artery before the injection of rat blood in dogs may be followed by a longer latent period after the injection of antigen than in normal dogs. Adrenalectomy at the height of the antibody curve in dogs does not change the antibody content of the blood serum. In rats, removal of about one-half of the liver appears to have no effect on the development of lysin for sheep corpuscles. The results recorded indicate that the mechanisms for the fabrication of antibodies are quite secure from certain disturbances, and they are in no way contradictory of the current view that these mechanisms are located in the blood-forming organs.

87. **Roentgen Ray and Antibodies.**—Repeated exposures of white rats to the Roentgen ray immediately after the injection of sheep blood did not interfere in any noteworthy degree with the production of lysin when the exposures, though sufficient to reduce the number of leukocytes in the blood, have no definitely detrimental effect on the general health of the animals. When the exposures are commenced some days before the injection of sheep blood and continued in such manner that the number of leukocytes is greatly reduced for from fifteen to twenty days after the injection of sheep blood, Hektoen found that the formation of lysin is restrained to a marked degree. This may be accomplished without any appreciable effect on the general health. In such animals the spleen, lymphatic tissues, and thymus are greatly reduced in volume and the bone-marrow changed. In the blood, the granular leukocytes are increased relatively and the total number of leukocytes is much below normal. A single prolonged and eventually fatal exposure to the Roentgen ray immediately before the injection of sheep blood may prevent any formation of lysin for the next eight days or so, or lysin may be produced after a longer period of latency than in the control animals. The results harmonize with the view that antibodies are produced in the spleen, lymphatic tissues and marrow, as these structures suffer most directly from the action of the Roentgen ray. The results indicate also that one reason why the lymphocyte appears to be an important agent of defense in tuberculosis and other conditions may be its power to form antibodies. In view of the destructive action of radium on the leukocytes and blood-making organs, it is altogether likely that it will be found to have the same general effect on the production of antibodies as the Roentgen ray.

89. **Fate of Foreign Erythrocytes in Rabbit.**—It is the purpose of Cary's paper to contribute evidence that foreign blood cells introduced into the circulating blood stream are engaged by and destroyed within certain fixed tissue cells of the liver and spleen.

Medical Record, New York

September 18, LXXXVIII, No. 12, pp. 467-508

90 Some Every Day Injuries to Eye, and What to Do for Them. R. Kalish, New York.
91 Epithelial Function in Relation to Disease. O. Paget, Freemantle, West Australia.
92 Syphilitic Arthritis. H. C. Stein, New York.
93 Does General Practitioner Utilize Means at His Disposal for Diagnosing Early Pulmonary Tuberculosis? J. S. Ford, Wallingford, Conn.
94 Use of Term "Psychanalysis" and Its Substitute. M. Solomon, Chicago.
95 Principles of Bromin Therapy in Epilepsy. E. S. Brodsky, Westport, Conn.
96 Health Week in Public Schools. A. W. Baird, New York.
97 Primary Mastoiditis; Report of Two Cases. C. B. Broder, New York.
98 Case of Intense Food Anaphylaxis. L. C. Frost, Los Angeles.
99 Case of Tetanus; Recovery. J. Murphy, Middletown, Conn.
100 Gout. M. Strunsky, New York.

New York Medical Journal

September 18, CII, No. 12, pp. 589-640

101 Gynecologic Aspects of Backache. G. W. Kosmak, New York.
102 Backache from Standpoint of Neurologist. M. Neustaedter, New York.
103 Influence of Civilization on Insanity. M. J. Karpas, New York.
104 Roentgen Rays in Study of Gastric Diseases. F. J. Dever, Philadelphia.
105 Foreign Bodies in Conjunctiva and Cornea. A. Brav, Philadelphia.
106 Hygienic Features of School Lunches. D. B. Armstrong, New York.
107 Maintenance Diet for Adults. R. H. Rose, New York.
108 Intraspinous Injection of Neosalvarsanized Serum. D. T. Miller, Terre Haute, Ind.
109 Formation of Urinary Calculi. B. G. R. Williams, Paris, Ill.
110 Cancer Problem. J. W. Long, Greensboro, N. C.
111 Refraction in Schoolchildren. A. S. Tenner, New York.
112 Hydatidiform Mole; Report of Eight Cases. J. F. Robertson, Philadelphia.
113 Indications for Surgical Treatment of Hyperthyroidism. T. Jameson, Rochester.

Oklahoma State Medical Association Journal, Muskogee

September, VIII, No. 4, pp. 121-152

114 Surgical Treatment of Potts' Disease. R. Walker, Pawhuska.
115 Congenital Dislocation of Hip. R. L. Hull, Oklahoma City.
116 Formaldehyd Treatment of Compound Fractures. W. W. Jackson, Vinita.
117 Diagnostic Value of Leukocyte Count. T. H. McC McAlester.
118 Intussusception. Livermore, Chickasha.
119 Intestinal Obs. L. Carson, Shawnee.

Tennessee State Medical Association Journal, Nashville

August, VIII, No. 4, pp. 161-204

120 Diagnosis and Choice of Operation in Certain Affections of Stomach and Duodenum. J. M. T. Finney, Baltimore.
121 Some Features in Management of Infectious Diarrhea. O. H. Wilson, Nashville.
122 Epidemic Otitis Media; Study of Its Manifestations. R. McKinney, Memphis.
123 Diagnosis of Syphilis of Nervous System. A. W. Harris, Nashville.
124 Tuberculous Meningitis. K. S. Howlett, Franklin.

Texas State Journal of Medicine, Fort Worth

August, XI, No. 4, pp. 205-258

125 Purification of Public Water Supplies and Sewage Disposal in Texas. J. B. Hawley, Fort Worth.
126 Digestive Symptoms of Pellagra. S. Harris, Birmingham, Ala.
127 Pellagra; Its Way and Prevention. W. F. Thomson, Beaumont.
128 Treatment and Prevention of Pellagra. C. A. Smith, Texarkana.
129 Pellagra Clinic. O. M. Marchman, Dallas.
130 Helminthiasis at Texas State Orphans' Home. J. H. Frey, Corsicana.
131 Filterable Virus. D. Meredith, Wichita Falls.
132 Foreign Body in Mastoid Cells; Foreign Body in Left Bronchus. W. D. Jones and H. B. Decherd, Dallas.
133 Chronic Purulent Otitis Media and Complications; Report of Cases. H. T. Aynesworth, Waco.

Wisconsin Medical Journal, Milwaukee

August, XIV, No. 3, pp. 77-114

134 Etiology and Pathology of Puerperal Pelvic Infections. D. Hopkinson, Milwaukee.
135 Puerperal Infection. W. G. Darling, Milwaukee.
136 Cryptogenic and Allied Infections of Surgical Import. R. H. Jackson, Madison.
137 Hodgkin's Disease and Allied Affections. J. L. Yates, Milwaukee, and C. H. Bunting, Madison.
138 Prognosis in Traumatic Neuroses and Psychoses. F. C. Studley, Milwaukee.
139 Camp of Instruction for Officers of Medical Reserve Corps. W. G. Merrill, Grand Rapids.
140 Tetanus; Site of Infection Unknown, Recovery. J. R. Longley, Fond du Lac.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, London

July, III, No. 9, pp. 1-156

1 *Character, Significance and Prognostic Value of Peritoneal Exudates. R. B. Carslaw.
2 Results of Operation for Malignant Tumors of Breast. G. E. Armstrong.
3 Three Mesenteric Tumors. E. P. Gould.
4 Retroperitoneal Hernia Cured by Operation, Report on Literature. A. R. Short.
5 *Clinical Study of Actinomycosis, with Illustrative Cases. V. Z. Cope.
6 Unilateral Hemorrhage and Unilateral Pain of Renal Origin. C. Wallace and L. S. Dudgeon.
7 Myeloid Tumor of Tendon Sheaths. M. J. Stewart and E. R. Flint.
8 Contemporary French Surgery. T. Tuffier.
9 Gunshot Injuries of Skull. C. A. Joll.
10 Gunshot and Other Wounds. F. P. Connor and H. Mowat.

1. **Peritoneal Exudates.**—An estimation of the character, significance and prognostic value of peritoneal exudates was made by Carslaw. His results are based on an examination of eighteen cases of appendicitis, four cases of perforated gastric or duodenal ulcer, one of tubo-ovarian abscess, and of femoral hernia, operated on by him. He found that the mononuclear phagocytes in the peritoneal exudate consist of two different types of cells, endothelial cells and large mononuclear leukocytes, which not only have two distinct sources of origin, but also can easily be distinguished from each other in all stages of their functional activity by the indophenol-synthesis test for oxydase. Examination of the peritoneal exudate is of great prognostic value in cases of spreading peritonitis, as it indicates the amount and virulence of the bacterial invasion and the extent to which the reactive forces of the peritoneal cavity have been, or are being developed. In considering the significance of the relative number of the various cells, their phagocytic activity, and their healthy or degenerated character, the duration of the bacterial invasion must always be borne in mind. The contention that an immediate examination of the exudate in cases of spreading peritonitis supplies information which indicates whether drainage of the peritoneal cavity is necessary or whether primary closure may be employed, Carslaw says, must be modified by three facts, namely: (a) Local drainage is often necessary although drainage of the general peritoneal cavity may be not only unnecessary but also injudicious. (b) Drainage of the general peritoneal cavity is only called for in very exceptional cases. (c) Effective drainage of the general peritoneal cavity is impossible.

5. **Study of Actinomycosis.**—Cope urges that actinomycosis should always be considered in the diagnosis in the case of any newly formed subacute or chronic swelling in the region of the mouth, face, neck, thorax, or right side of the abdomen. Pus from every abscess should be examined as a routine practice. In any subacute or chronic lesion, the discharge needs to be examined repeatedly. Peribuccal infections comprise the majority of the cases. Here the organism enters most often through the mucous membrane of the alveolar margin near a carious or erupting tooth, or through the tooth socket into the jaw. The fungus is taken in with the food, and lodges round the teeth. The features of the hard peribuccal form are characteristic and can often be diagnosed long before pathologic investigation can give much help. Treatment by the administration of iodids, by vaccine therapy, and by surgical measures, promises the best results.

British Medical Journal, London

August 28, II, No. 2852, pp. 317-352

11 *Treatment of Gunshot Wounds by Excision and Primary Suture. H. M. W. Gray.
12 *Use of Certain Antiseptic Substances in Treatment of Infected Wounds. H. D. Dakin.
13 Use of Sleeve of Vein in Nerve Suture. A. Fullerton.
14 Treatment of Gunshot Fractures of Leg with Posterior Wounds. C. A. Morton.
15 Extraction of Foreign Bodies. J. R. Caldwell.
16 Open-Air Treatment for Wounds. W. E. Nelson.
17 Public Health Work of British Medical Association. H. Jones.

11. **Treatment of Gunshot Wounds.**—The advantages claimed for this method of treatment by Gray are: Healing by first intention is assured in the vast majority of properly selected cases. Much time is thereby saved. Some wounds, which would otherwise require months to heal, are soundly united in the course of from ten to fourteen days. The soldier is thus available for duty again at a much earlier date. The amount of attention required to be given by the medical officers and nursing sisters, etc., is greatly reduced. Much pain is avoided. The amount of dressings required is reduced to a minimum, and in this way expense is lessened. Complications which may arise from the presence of a septic wound are avoided. A more sightly scar is obtained. Because of the absence of the contraction which would accompany the formation of a large cicatrix, there is less impairment of function in the part concerned. In the case of head injuries, excision of the wound, especially in some, apparently trivial, injuries, provides a means of ascertaining, with greater certainty than by any other method, whether depressed fracture or injury to the brain coexists. Gray says that healing by first intention may be procured in practically all cases in which the surfaces of the new wound can be brought into accurate approximation without much tension. In rare cases, when the wound is deep, approximation in the depth has to be dispensed with and drains are introduced for a short period—until one is assured that aseptic healing will occur. In some cases it is necessary to adjust and fix the parts of the body adjacent to the sutured wound so that the fullest relaxation is secured. The mere length of a wound is no bar to operation. It is not necessary to wait until the wound is surgically clean, in fact, in most cases, the sooner the excision is made the better. Only when a large "bank" of inflamed tissue surrounds the wound is immediate excision inadvisable on account of the septic condition of the wound. By vigorous "salting" (hypertonic treatment) such wounds are usually rendered suitable for excision in from twenty-four to forty-eight hours. Other

of the maneuver. The condition of Babcock's patient necessitated implanting one of the ureters into the rectum, so that only one was implanted into the appendix. He was a poor operative risk at best, and died two days after the intervention. Babcock does not believe that the uretero-appendiceal anastomosis possesses any great advantages, as it does not avoid contraction of the scar of the divided end of the ureter, the resulting stenosis being one of the main causes of renal infection after this type of operation.

A successful implantation of the ureter into the loin is recorded by Martin,[29] in a case of carcinoma which necessitated removal of the bladder and the uterus. With the exception of a tendency of the epithelium to cover the orifice of the ureter, which made dilatation necessary from time to time, the condition was all that could be desired. Symptoms of suppurative inflammation of the kidney sixteen months after the operation led to a nephrotomy, from which the patient made a good recovery and is reported well and comfortable seven months afterwards.

Implantation into the rectum with good results is reported by Arumugum,[30] of Bungalore, India, in two cases of extroversion of the bladder. Both patients were seen again four and a half years after the operation and both (the younger a boy of 13) were able to control urine five or six hours during the day and eight hours or more during the night.

The care of the ureters, we thus see, presents many difficulties and the "ideal method" has not yet been devised. Investigators are busily engaged in experimental studies that may possibly lead to the Eldorado of this branch of surgery. I regret that I can do no more than mention in this connection the excellent and brilliant work, among others, of our own Eisendrath,[31] Coffey,[32] Jones[33] and Barber;[34] that of Schmidt and Kawasoye,[35] in Germany; Chiasserini,[36] in Italy; Zaaijer,[37] in Holland; and the Russians, Shisko,[38] and Iljin.[24]

An unusual case of double ureters with intravesical ballooning of the lower ends is described by Young.[39] Both ureters opened into the bladder through a diverticular orifice. This diverticulum could be turned inside out at will, and whether so turned or not it was seen to be made up of a greatly dilated ureter. A plastic hernia operation was performed with apparently favorable results, as there was no evidence of intravesical ballooning when the patient strained. In a cursory review of the literature Young failed to find another like instance.

In a case presenting three ureters, one opening extravesically, Furniss[40] operated by making an incision into the mucosa, covering the under surface of the urethra over the catheter. Unfortunately the incision went into the much-dilated ureter. A sound was then passed into the bladder, and its mucosa and the mucosa of the sac were united with fine catgut in such a way that the distal end was obstructed. Thus the ureter was made to enter the sac, and from there to the bladder a fistula was formed. At a second operation, thirteen days after the first one, the ureter was dissected backward for 1½ inches. It had increased in size toward the renal end. A suture was placed through the end of the ureter and a sound passed into the bladder. This made the bladder bulge backward and to the left; a small incision was then made into this. The suture was held to the sound and the ureter pulled into the bladder, where it was held with one suture through the bladder and a part of the ureter. The suture pulling the ureter into the bladder was attached just below the clitoris. Postoperative cystitis yielded to treatment and recovery was perfect.

An aberrant, supernumerary ureter was treated by Hartmann[41] by resecting the dilated portion, freeing it for about 1.5 cm., and implanting it into the bladder per vaginam. The results were good. Subsequent cystoscopy showed that the implanted organ had become somewhat flattened. The two normal ureters were entirely independent of the implantation point.

Duplication of the ureters is not an unusual phenomenon, but the abnormality is frequently not suspected until some postoperative condition calls attention to the possibility of its existence. After an operation for cancer of the cervix, during the course of which Worrall[42] had traced the ureters to the bladder and isolated their pelvic portion, the meager amount of urine passed by the patient and her general poor condition led to the suspicion of the presence of double ureters, and that the main canal on each side had been tied. A second operation was done. The ureters were easily located, as they were both dilated above the ligatures. They were disinterred and after splitting their ends, were implanted into the bladder close to the other ureter on each side, which could be plainly seen. Leakage persisted for several months, but complete recovery was finally established seven months after the operation.

While operating in a case of carcinoma of the rectum, Samborski[43] found reduplicated ureters separated from the surrounding tissue and connected with each other by the intervening cellular tissue. He transplanted the two organs as one; the cellular tissue connecting them served conveniently for attaching them to the intestines. The fold of the rectum covered both ureters as if they were one body, and the orifices of the two ureters were sutured in as one, with a single opening of the rectum. The right (single) ureter was somewhat dilated; this was also sutured into the rectum. Metastatic lesions were found in the right ureter. The patient did well up to the twelfth day, when he gradually began to fail, though there was no rise in temperature. Death ensued on the seventeenth day.

Intravesical cysts, while not very rare, have not frequently been diagnosed by means of the cystoscope as Gayet[44] was able to do. He removed the growth by a hypogastric incision, a method not usually employed for the purpose. After the incision was made, the cyst could be seen in the right ureter and the fluctuation of the tumor showed that urine had found its way into the cyst, although no orifice could be detected. An incision was made at the base of the tumor and a pouch, from which a certain amount of urine escaped on pressure, was removed. A crown suture of fine catgut was placed at different points through the ureteral and the vesical mucosa. The bladder was sutured and space allowed for drainage tube. A permanent catheter was introduced. On examination of the pouch, the orifice could be located only by means of a magnifying glass. The lesion was evidently a congenital one.

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[29] Martin: Ann. Surg., 1911, liii, 423.

[30] Arumugum: Am. Jour. Surg., 1911, xxv, 169.

[31] Eisendrath, Daniel N.: The Repair of Defects of the Ureter, The Journal A. M. A., Nov. 8, 1913, p. 1694.

[32] Coffey, R. C.: Physiologic Implantation of the Severed Ureter or Common Bile Duct into the Intestine, The Journal A. M. A., Feb. 11, 1911, p. 397.

[33] Jones: Am. Jour. Obst., 1914, lxx, 329.

[34] Barber: Ann. Surg., March, 1915, p. 273.

[35] Kawasoye: Ztschr. f. gynäk. Urol., 1913, iv, 107.

[36] Chiasserini: Policlinico, Rome, 1912, xix, sez. chir., p. 247.

[37] Zaaijer: Beitr. z. klin. Chir., 1915, xciii, 235.

[38] Shisko: Vrach. Gaz., St. Petersb., 1913, xx, 1604.

[39] Young: Tr. Am. Urol. Assn., 1912, vi, 161.

[40] Furniss: Med. Rec., New York, 1914, lxxxv, 589.

[41] Hartmann: Ztschr. f. Urol., 1912, ii, 83.

[42] Worrall: Jour. Obst. and Gynec., 1914, xxvi, 159.

[43] Samborski: Russk. Vrach, 1913, xii, 568.

[44] Gayet: Lyon méd., 1912, cxviii, 1460.

Pietkiewicz[45] attributes cystic dilatation of the vesical ends of the ureters primarily to a stenosis of the ureteral orifice, and resulting in urinary stasis in the lower portion of the ureters. He describes two such cases with prolapse of the ureter through the urethra. This is perhaps one of the most unusual diseases of the urinary system. Ten cases have been reported as occurring in little girls, but Pietkiewicz knows of only two other cases besides his own, one reported by Simon and the other by Hartmann, in Jena. Diagnosis was made at operation in all these cases. Pietkiewicz was the first to use the high incision for the operation (1909).

The tumor in his first case was seen on examination at the dilated meatus of the urethra, and preliminary treatment consisted of removal under light narcosis. At cystoscopic examination the tumor was seen, the base of which covered the greater part of the trigonum. The right ureteral orifice was not visible. The left one appeared in the form of a club-shaped pulsating protrusion, the point of which was concave with a tiny, scarcely visible, ureteral opening. At operation the cavity of the cystic dilatation was found to communicate directly with the dilated lumen of the ureter. The walls of the growth were dissected off and the wound closed with sutures. A wide gaping orifice was now visible, from which urine flowed periodically. Cystoscopy a week later showed normal bladder mucosa and the urine flowing in a rhythmic stream from a normal ureteral orifice. The correction of the stenosis on the other side was postponed for another occasion. In the second case described by Pietkiewicz, the bladder tumors were unusually large and the condition was complicated with pyelonephritis. The tumors were removed at several sittings, without anesthesia, by means of a knife encased in a blunt-end metal sheath introduced through the urethra. All symptoms disappeared as soon as the stenosis at the ureteral orifices was removed.

Pietkiewicz sketches the pathologic process thus: The club-shaped protrusion (Case 1) of the left ureteral cushion represents the initial stage of the dilatation, the pear-shaped tumors of Case 2 being the second stage. The condition around the ureter in Case 1 showed that the right kidney was secreting urine, but no regular rise and fall of the tumor could be noted after the prolapse had been corrected. This stationary form, which differs little from a genuine cyst, would represent the last stage of the dilating process. As long as the dilated ureteral end remains in the first or in the second stage, that is, as long as the walls of the tumor retain their muscular function and take an active part in the ureteral peristalsis, there is little or no danger of a prolapse. It is the third stage, when the tumor has attained a certain size and its walls have lost their muscular power, that represents a favorable condition for prolapse. The dilated end of the ureter may easily be carried by the force of the urinary flow into and occasionally tampon the inner urethral orifice. The urinary troubles that result force the patient to help by means of pressure and bring about the prolapse.

Algave and Papin[46] describe a case in which the ureter abnormally opened into the urethra and had caused enormous dilatation of the pelvic and lumbar regions. They succeeded in passing the catheter into the abnormal orifice, which seemed dilated into a wide pouch, from which pus was evacuated. The collargol picture showed that this abnormal ureter was markedly dilated for its entire length. The kidney was fused with the suprarenal capsule and was removed with difficulty. These authors seem to think that this condition is a more frequent occurrence than is generally supposed, and that it is seen more often among woman than among men.

Juvara[47] mentions a case of aberrant ureter opening into the vulva to the right of the ureteral orifice. The abnormal canal was found to join the ureter at a sharp angle directly below the kidney pelvis. It was resected for a distance of 18 cm. Under the microscope it presented typical ureteral structure.

Hernia of the ureters is not frequent. Gilberti[48] has collected reports of thirty-three cases. He advises burial of the ureter into the bladder as the most successful procedure when conditions permit.

REPORTS OF CASES

Case 1.—Mrs. W., aged 27 years, was admitted to the Jefferson Hospital complaining of pain in the right lumbar region. There is a family history, on the maternal side, of cardiorenal disease for several generations back. The patient herself, with the exception of an attack of pneumonia at 24 years, had always enjoyed good health. She is the mother of two healthy children, 12 and 9 years of age. Menstrual periods have always been more or less painful.

Her present trouble dates back two years, with the sudden onset of pain in the right lumbar region, radiating along the course of the ureter into the right labia. Intermittent attacks (usually coming on before the menstrual period) have recurred since then with more or less violence. Of late during the greatest distress the pain radiates to the left labia and the left thigh; there is some dyspnea, and urine seems to be decreased followed by an increased flow. The attacks last several hours and are always followed by nausea, vomiting, soreness and exhaustion.

The left kidney could not be palpated at examination. A smooth mass, moving with respiration, was palpated in the right hypochondrium; tenderness was marked over the right kidney.

Cystoscopic examination showed a normal bladder; the ureteral orifices were also apparently normal. The pyelogram disclosed a displaced right kidney, small stone in the kidney pelvis, kinked ureter and hydronephrosis. In the left kidney region there was no collargol shadow seen, which suggested a unilateral right kidney.

At operation the kidney was approached through the Koenig incision. The upper part of the ureter was distended and kinked, the elbows of the kink being firmly adherent. The renal pelvis was also much distended. When the adhesions surrounding the kidney and ureter were loosened up, the second ureter was found and traced to the extreme upper portion of the dilated kidney pelvis. The pelvis was then incised, and, after the calculus was removed, a part of the renal pelvis was resected and repaired by double-line suture. A nephropexy was then done—four sutures, two on either side through the renal capsule, incorporating a small amount of cortex—and the organ sewed in position. Considerable fat and fascia were transplanted along the ureter at the site of kinking in order to prevent another angulation. After the kidney was fixed, the position of the ureter at its outlet from the pelvis was found at the lowest point of the repaired renal pelvis. The second ureter was traced down to the lumbar vertebra, where it crossed over to the left side, entering the bladder approximately in a normal position. This ureter was ligated and resected. The patient made an uneventful recovery, being discharged five weeks after operation. When seen again eleven months later, she was in the best of health, and had had no recurrence of the renal pain.

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[45] Pietkiewicz: Ztschr. f. gynäk. Urol., 1910-1911, ii, 261.

[46] Algave and Papin: Bull. et mém. Soc. de chir. de Paris, 1913, xxxix, 110.

[47] Juvara: Bull. et mém. Soc. de chir. de Paris, 1913, xxxix, 100.

[48] Gilberti: Riv. veneta di sc. med., 1913, lviii, 86.

Case 2.—H. M. P., aged 32 years, came under observation Sept. 13, 1913, with a history of repeated attacks of left renal colic, during the past eighteen months, increasing in severity as time went on. Five roentgenograms taken during this period, as well as a sixth one after his admission to the hospital, all gave a negative picture. The catheter introduced into the left ureter met an obstruction at about 10 cm. from the orifice. The stricture, thus found, was treated by gradual vesicle dilatation for one month on alternate days, resulting in relief. The patient was dismissed apparently well. Another severe attack during the next month obliged him to return for further treatment. It was now decided to explore the ureter. The incision was made along Poupart's ligament and the great vessels exposed at the ileosacral junction. The ureter was easily recognized, a catheter having been previously inserted. The ureter was dissected from its peritoneal attachment to the point of narrowing, above which it was somewhat distended; a small stone was detected on palpation and removed through a longitudinal incision approximal to the stricture; the incision was continued for about 1.5 cm., dividing the stricture freely. A transverse line of two-tier sutures was inserted, increasing the constricted lumen beyond that of normal caliber. The wound was closed with a cigarette drain to provide against leakage. No leakage occurred; the patient made an uneventful recovery and is well, one and a half years after operation.

I desire also to report a case of successful implantaken of the ureter into the loin.

Case 3.—W. B., hotel clerk, aged 33, came under observation, November, 1904, with a history of sudden attack of severe renal colic, referable to the right kidney. The patient had had four severe attacks prior to his admission into the hospital. By palpation over the right loin a large painful mass was detected. The urinary analysis showed a large quantity of pus and red blood cells. The Roentgen ray revealed a shadow of a good-sized stone in the pelvis of the kidney. The patient was profoundly toxic. At operation pyonephrosis was found, with stone in the pelvis. It was decided, owing to the grave condition of the patient, to drain the kidney, preliminary to doing a nephrectomy. It was also found convenient at this time to bring the ureter into the loin, where it was fixed in position with a few interrupted sutures, with a view of expediting the secondary operation. The patient improved rapidly and refused further operation. He was discharged from the hospital the thirty-third day following his admission. Nearly twelve years have elapsed since the ureteral implantation. The patient has enjoyed the best of health and says that he does not experience much inconvenience from the urinary drain in the loin.

1819 Walnut Street.

Rufus of Ephesus.—To generations of practitioners unworthy to hand him ligatures Rufus of Ephesus (Reign of Trajan, early part of second century A.D.) was known by the "pilulae Ruffi," "the pills I would not be without"—"pilulae sine quibus esse nolo"—still in the British Pharmacopoeia as the pill of aloes and myrrh. In the brilliant Ionian profession of the early days of this era Rufus doubtless had predecessors and teachers, but he stands out a strong, clear figure, a great "magister chirurgiae," a title justly earned by his remarkable contribution to the surgery of haemostasis.—Osler.

URETERO-ENTERIC ANASTOMOSIS

A FURTHER EXPERIMENTAL STUDY *

W. HOWARD BARBER, M.D.
NEW YORK

The problem of the disposition of the ureter that has been separated from the bladder by accident or reason has engaged the attention of many thoughtful and ingenious surgeons for the past sixty-five years. The feat has been attempted from different points of view. To prevent peritonitis, Lloyd and Simon[1] worked extraperitoneally. To preserve the immediate ureteral vesical relations, Pisani, Peterson,[2] Maydl and Moynihan transplanted both of the ureters and the adjacent portions of the bladder involving the area of the trigonum vesicae. To accomplish both at once, Bergenhem[3] removed the ureterovesical rosettes separately and extraperitoneally.

Again, to protect the transposed ends of the ureters from contamination by the fecal stream, Gersun,[4] Tizzoni, and Pozzi substituted for the bladder evaginated intestine and transplanted the severed ureters into it. Martin,[5] Kryinski,[6] Fowler,[7] Boari[8] and numerous others, without removing any portion of the bladder or without creating one artificially, anastomosed the ureters to the lower bowel directly. They endeavored to elaborate a defensive barrier in the union of the extreme caudal ends of the ureters with the normal bowel. Tuffier, Coffey[9] and Beck[10] attempted the same result, but allowed the ureteral ends to protrude into the intestinal lumen. All these workers[11] have striven to produce, largely through anatomic study, a perfectly functionating entero-ureteral anastomosis.

Reviewing these different technics in entirety, they appear to have been suture methods (with the possible exception of Boari's, in which a button was used) and contrivances retaining the ureterovesical valve or its equivalent. Especially painstaking seem to have been the efforts spent to create resistance at the caudal end of the ureter equivalent to that presumably present in the normally intact ureter. Fowler[7] pertinently criticized the Maydl operation for "making no allowance for the changed pressure conditions of the rectum" and for involving "extensive dissection," and Kryinski's method in that the "pressure exerted was fallacious in accomplishing the result" desired, while at the same time Fowler buried his ureter for an arbitrary distance and consequently with an unknown resistance in the muscular fibers of the rectum. Coffey[9] called his enteric implantation of the ureter "physiologic," while simulating the anatomy of the ureterovesical termination. The latter method has been followed by C. Mayo[12] in four cases recently reported by him. It seems to me, however, that the physiology of the ureter has for the greater part been disregarded, for it is believed at the present day that the ureterovesical valve is negligible physiologically. This dissimilarity between the pressure conditions of the intestinal tube and the closed urinary bladder further emphasizes the impertinence of a vesical ureteral termination in the bowel.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Laboratory of Experimental Surgery, New York University and Bellevue Hospital Medical College.

[1] Simon, Lancet, London, 1851, ii, 375.

[2] Peterson, Reuben: Anastomosis of the Ureters with the Intestine: An Historical and Experimental Research.

[3] Buchanan, J. J.: Remote Results of Bowel Implantation of the Ureters into the Bowel for Exstrophy: A Consideration of the Extraperitoneal Method of Bergenhem, Surg., Gynec. and Obst., 1909, viii, 146.

[4] Gersun: Wien. klin. Wchnschr., 1898, No. 43, p. 990.

[5] Martin, F. H.: Implantation of the Ureters into the Rectum, The Journal A. M. A., April 1, 1899, p. 709.

[6] Referred to by Connell, F. G.: Exstrophy of the Bladder, The Journal A. M. A., March 9, 1901, p. 637.

[7] Fowler: Implantation of the Ureters into the Rectum in Exstrophy of the Bladder, with a Description of a New Method of Operation, Am. Jour. Med. Sc., 1898, cxv, 270.

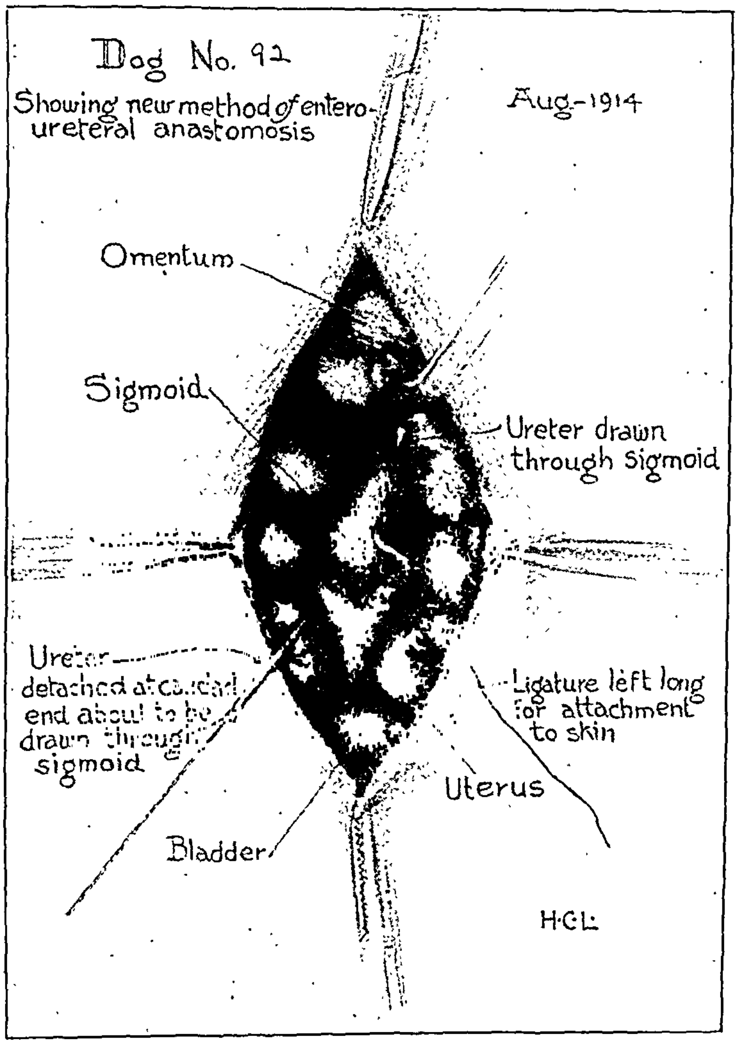
[8] Boari: Ann. d. mal. d. org. génito-urin., 1896, xiv, 1.

[9] Coffey, R. C.: Physiologic Implantation of the Severed Ureter or Common Bile Duct into the Intestine, The Journal A. M. A., Feb. 11, 1911, p. 397.

[10] Beck, C.: Chicago Med. Recorder, November, 1899.

[11] Rickets, B. M.: Surgery of the Ureter: an Historical Review, 1905, p. 1585. Hartley, F.: The Operative Treatment of Exstrophy of the Bladder. See also Footnotes 2 and 6.

A further objection to all the operations to date is appropriately described by Matas,[6] thus:


Dog No. 92
Showing new method of entero-ureteral anastomosis
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Omentum
Sigmoid
Ureter drawn through Sigmoid
Ureter detached at caudal end about to be drawn through sigmoid
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Fig. 1.—New method of entero-ureteral anastomosis.

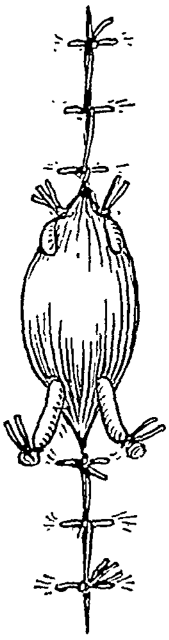

Fig. 2.—Ventral view.

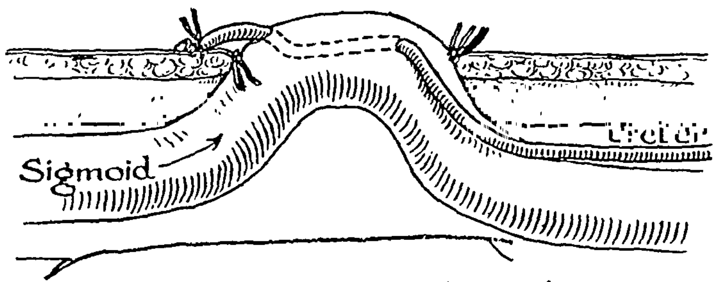

Fig. 3.—Lateral view, semidiagrammatic.

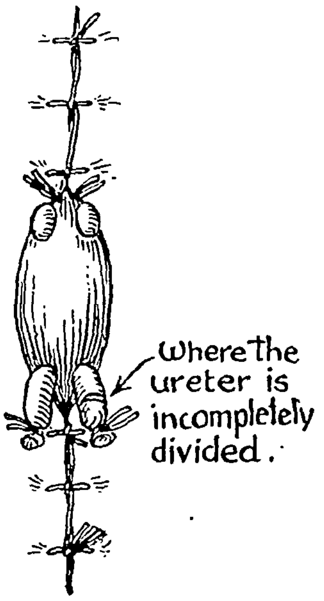

Fig. 4.—Distended ureteral ends.

> The operator who cuts off both ureters from the bladder and transplants them into the colon, must experience a certain and unavoidable anxiety—an anxiety that only further experience will overcome, that is born of the feeling that he has burned his ship behind him and has staked all his patient's chances, all his hopes, in the hazard of the game. It is the utter hopelessness of remedying the evil that must make any conscientious operator vacillate many times over before deciding to embark on so perilous an undertaking.

A number of salient physiologic facts were brought out by our laboratory studies during the past two years. It was determined by Draper and Braasch[13] at the Mayo Clinic in 1911 that the ureterovesical valves may be destroyed in the presence of purulent cystitis without probable kidney infection. It was evidently probable from the studies[14] presented at Atlantic City in June, 1914, that of the two factors, namely, the ureteral peristalsis and the mechanism of the ureterovesical valve, the peristaltic factor is often the vitally important one in the determination of a possible renal infection. Furthermore, it was shown that when this ureteral function was seriously impaired, amounting virtually to a ureteral paralysis, and the ureterovesical valve function was left intact, hydronephrosis followed in 75 per cent. of cases.[15] The latter experiments have been repeated during the past fall with the following results:

> In Dogs 16 and 17, the *infected vesical body had become* a ureteral calculus. The expected results followed in a more accentuated form, but because of this new variant, these experiments have been omitted from consideration.
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> Dogs 6 and 22 are negative.
>
> Of the remaining, 50 per cent. are hydronephrotic and 83⅓ per cent. are hydronephrotic or have dilated ureters. These results may be seen to compare favorably with those already referred to.

Hence, it appeared that an operation to have substantial functional value must, above all, involve the least possible traumatization of the ureter. Furthermore, it must be granted that some degree of traumatization is inevitable and that its peristaltic efficiency is proportionately impaired. Therefore the caudad resistance must be proportionately decreased if the ureter is expected to empty itself. For this reason, not only the resistance of a normal valve appeared too great, but also all resistance arising from artificially created plastics appeared too great. The problem then remains: How anastomose the ureters with the lower bowel with the least interference with their peristaltic function and with the establishment of caudad resistance physiologic for them in their necessarily impaired states?[16]

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[12] Mayo, C.: Exclusion of Bladder, an Operation of Necessity, Collected Papers of St. Mary's Hospital, 1913.

[13] Draper, J. W., and Braasch, W. F.: The Function of the Ureterovesical Valve, The Journal A. M. A., Jan. 4, 1913, p. 20.

[14] Barber, W. H., and Draper, J. W.: Renal Infection: A Further Experimental Study of Its Relation to Impaired Ureteric Function, The Journal A. M. A., Jan. 16, 1915, p. 205.

[15] Stewart and Barber: Hydronephrosis: An Experimental Study, Ann. Surg., December, 1914.

TABLE 1.—REPORT ON SECOND SERIES OF URETERAL TRAUMATIZATION, DEC. 7, 1914

Dog No.	Days of Life	Pathologic Condition of Urinary Tract
23	50	Dilatation of cephalad ureter cystitits
6	23	Purulent cystitis
16	12	(Abdominal organs negative.) Left hydronephrosis; hydro-ureter; pyelonephritis. Right pyelonephritis. Sup. cystitis; acute vesical retention; urethral calculus.
14	15	Left hydronephrosis; cystitis
17	15	Cong. kidneys. Left hydro-ureter; cystitis; urethral calculus
13	15	Cong. kidneys; cystitis. Dil. of cephalad ureter
15	14	Left hydronephrosis; cystitis
24	9	Left hydro-ureter; hydronephrosis; cystitis
80	21*	Left hydronephrosis; cystitis
82	11	Left pyonephrosis; hydro-ureter; cystitis
5	50*	Left dil. of cephalad ureter; cystitis
22	10*	Negative
83	20*	Left hydro-ureter
81	16	Left hydronephrosis; hydro-ureter; cystitis

* Etherized.

The following operation represents an attempt to correlate the experience of others with the recently obtained physiologic knowledge of the ureter:

A mesoventrad incision is made in the lower abdomen. The bladder is drawn toward the wound. One or both ureters may be created as follows: identify, doubly ligate, and cut between ligatures; attach a large, straight cutting needle to the cephalad end by its ligature, and penetrate the sigmoidal wall in the plane of the mesenteric reflection. Drive the needle with the aftercoming ureter obliquely for from 1.5 to 2 cm. through the wall, with the colon held on the stretch. At a point approximately 1 cm. obliquely distant from the point at which the needle enters the lumen of the sigmoid, penetrate the colon perpendicularly, drawing the ureter out on the skin. Suture the ureter to the skin by its ligature and close the wound about that part of the sigmoid traversed by the ureter. It is of advantage to strip the ureter in its caudad one fourth and to free the distal two fourths digitally to avoid angulations, torsion or harmful tension. It is important to see the ureteral ends distended before the closure of the abdominal wound in order to make certain that the urine flow is not obstructed. It is convenient to divide the ends incompletely to free the urine after completion of the operation, although this may be delayed six hours apparently without resultant ureteral or renal injury.

The technical results of this procedure may best be appreciated by a review of the experimental series tabulated herewith.

The following points with reference to Tables 1 and 2 are noteworthy:

1. The results of the preceding operations are operative only, for none of the animals received postoperative surgical attention.
2. Plus physiologic caudad ureteral resistance is manifested first by dilatation of the cephalad end of the ureter.
3. Continued incomplete ureteral obstruction leads to a dilatation of the second and third portions of the ureter and a dilatation of the renal pelvis.
4. Direct ureterosigmoidal entrance is more obstructive than the oblique entrance and the more oblique (from 1 to 2 cm.) the less that obstruction.

CONCLUSIONS

1. Ureterosigmoidal plastics are tedious for the operator and unsafe for the patient.
2. Operations in which the caudad ends of the ureters are allowed to protrude freely or fixedly within the sigmoid are meritorious in so far as the intramural portions of the ureters are unobstructed. Time spent in elaborating the terminal relations of the ureters is therefore valueless.
3. Oblique entrance from 1.5 to 2 cm. and the least foreign substance including blood and injured tissues are conducive to the least reactive inflammatory occlusion of the intramural portions of the ureters. These are most conveniently accomplished by the needle and ligature.

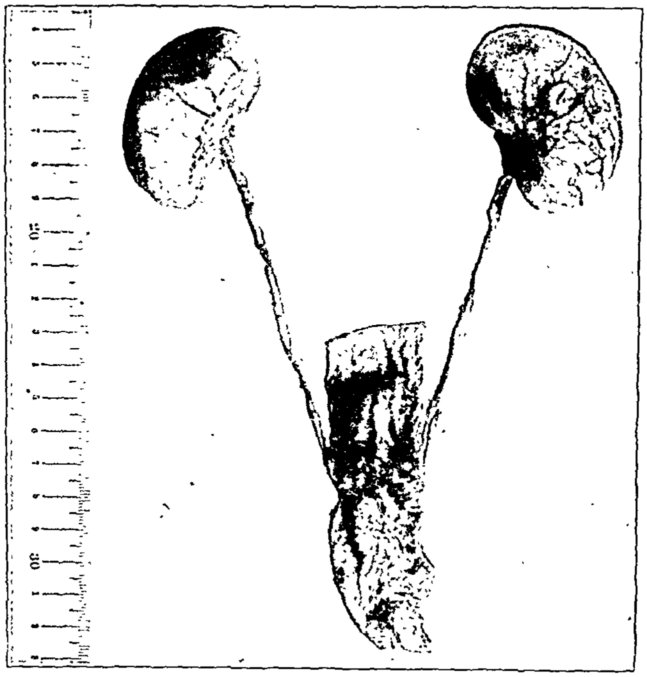

Fig. 5 (Dog 199 B 2).—Left kidney with foci of infection and right kidney normal fourteen days after transplantation of left ureter perpendicularly and right ureter obliquely for 2 cm. into sigmoid. Note sacculation of sigmoid with caudad ends of ureter firmly embedded in its mesenteric wall.

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16. Barber: Uretero-Enteric Anastomosis, Ann. Surg., March, 1915.
In addition to the foregoing references, the following may be consulted:
Reynolds, Edward: A Case of Vesical Implantation of the Ureter by Dudley's Forceps Method After Failure of Several Plastics, Boston Med. and Surg. Jour., Jan. 24, 1901.
Cabot: Am. Jour. Med. Sc., 1892, ciii, 43.
Harrison: Lancet, London, 1897, p. 1091.
Matas: Treatment of Exstrophy of the Bladder by Making a Receptacle for the Urine out of the Lower Cecum, Utilizing the Appendix for the Urethra, Zentralbl. f. Chir., Aug. 13, 1910.
Thomson: Ztschr. f. Geburtsh. u. Gynäk., 1893, p. 173.
Bottomley, J. T.: Operative Treatment of Exstrophy of the Bladder by Transplantation of the Ureters on to the Skin of the Loin, The Journal A. M. A., July 13, 1907, p. 141.
Berg: Treatment of Exstrophy of the Bladder, Nord. Med. Ark., Surg. Sect., 1907, No. 1.

resistance in the muscular fibers of the rectum. Coffey[9] called his enteric implantation of the ureter "physiologic," while simulating the anatomy of the ureterovesical termination. The latter method has been followed by C. Mayo[12] in four cases recently reported by him. It seems to me, however, that the physiology of the ureter has for the greater part been disregarded, for it is believed at the present day that the ureterovesical valve is negligible physiologically. This dissimilarity between the pressure conditions of the intestinal tube and the closed urinary bladder further emphasizes the impertinence of a vesical ureteral termination in the bowel.

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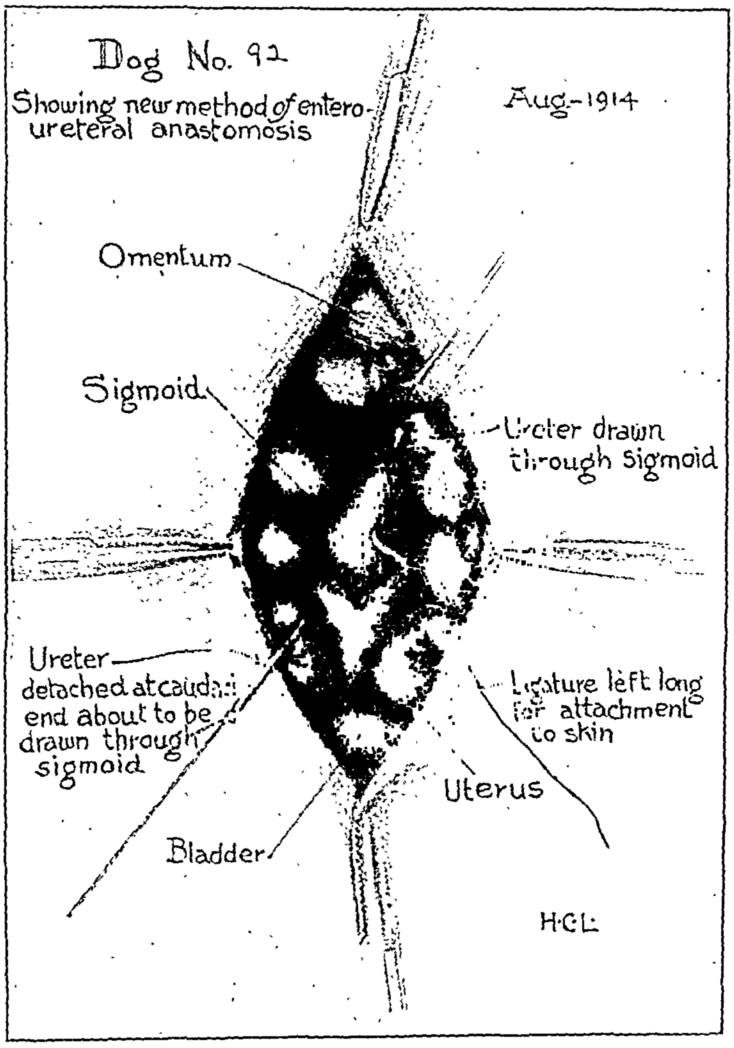
> The operator who cuts off both ureters from the bladder and transplants them into the colon, must experience a certain and unavoidable anxiety—an anxiety that only further experience will overcome, that is *born of the feeling that he has burned his ship behind him and has staked all his patient's chances, all his hopes, in the hazard of the game.* It is the utter hopelessness of remedying the evil that must make any conscientious operator vacillate many times over before deciding to embark on so perilous an undertaking.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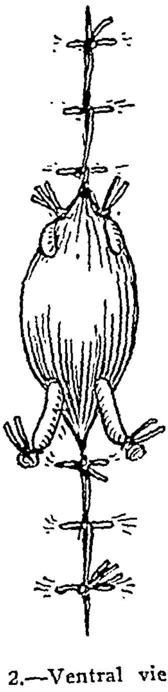
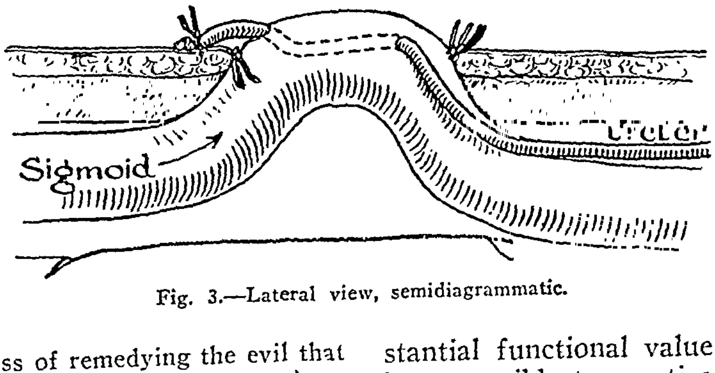


Fig. 2.—Ventral view.



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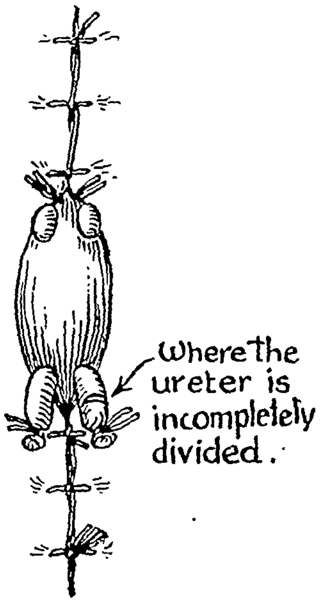

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[12] Mayo, C.: Exclusion of Bladder, an Operation of Necessity, Collected Papers of St. Mary's Hospital, 1913.

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Dr. Bransford Lewis, St. Louis: I want to congratulate Dr. Braasch on the number of cases in which he has removed a stone from the ureter by cystoscopic methods—sixty-four cases. That is a good many more than I have done, but I am working up to that number gradually. For a number of years I have been advocating such a procedure before subjecting a patient to laparotomy. Some of you may be interested in the developments that have been made on that subject, and the several instruments that have been submitted by various authors to accomplish such a result. I am yet to be convinced that it has any legitimate danger. One contributor at the Pan-American Congress last week mentioned that he had, previous to operating, run in a stiff instrument of some sort and he had penetrated the ureter, and in operating he had been surprised to find out that it was outside of the ureter instead of inside. I do not think that comes within the scope of what might be expected. One should use instruments which are not of sufficient strength or stiffness to do that kind of damage.

Wappler of New York has lately constructed for me a ureteral dilator that has enabled me to go up into the ureter four or five inches, and by a special method I am permitted to dilate the narrowed part of the ureter. This is modelled like a Kollman urethral dilator, using two prongs instead of four, with a blunt end that is brought into contact with the stone, and then gradually, under the control of the operator on the outside, by means of the handle, the dilator is forcibly distended. In certain cases I have been able to get the stone down with this dilator when I had been unable to do so by other instruments and technic. This I consider an advance. Undoubtedly there have been several hundred cases that have been successfully reached in this way, which is sufficient evidence that these methods should be applied or resorted to before a kidney operation is had.

Dr. Frank Hinman, San Francisco: It seems to me that the significant feature in the analyses of these cases by Drs. Braasch and Cabot is the finding by one of 17 per cent. absence of blood and pus, and by the other of about 20 per cent. It is usual to consider absence of blood and pus after careful microscopic examination as strong presumptive evidence of the absence of stone. Both of these men also report a high percentage of failures of the Roentgen ray, considered by Dr. Cabot as being as high as 20 per cent. The symptoms, as shown by these analyses cannot be relied on for diagnosis. Therefore, we must have other means of diagnosis of stone in the ureter. The absence of blood and pus cannot be given much significance if absent in over 20 per cent. of cases, and the failure of the Roentgen ray in over 20 per cent. of cases means that a negative Roentgen ray does not eliminate the possibility of stone. The use of the wax-tipped catheter has not been mentioned, but it is the most accurate means of diagnosis at our command and should be used in every doubtful case. I wish to report a practical and simple method of application of the wax-tipped catheter in the male. A soft rubber urethral catheter, (No. 9 or 10 F.) which passes loosely through the operating telescope of the cystoscope, is cut off and slit up at one end so that when these ends are turned back over the telescope entrance they will hold the sheath in position with its distal end just beyond the lever of the instrument. The wax-tipped catheter may be passed through this rubber sheath without any danger of scratches from the lever or beak of the instrument, and this has the added advantage that several waxed tips may be passed at the one time and all withdrawn for examination without previously withdrawing the cystoscope. Functional study and pyelography may also be done at the one cystoscopy.

Dr. John W. Draper, New York: I am interested very much in the subject from the standpoint of experimental surgical physiology. I had the privilege of working with Dr. Braasch on the matter of this valve. The work was started by Dr. Lewis originally. I do feel that we showed conclusively by our experiments that the valve was of very little value. Its protective power against renal infection is perhaps about 10 per cent.; that of the physiologic integrity of the ureter itself, 90 per cent. I am therefore very much interested in listening to the discussion of the members of the section on this subject. Dr. Coffey's work is certainly a very important one and I congratulate him on its success. I feel that whatever the outcome of these studies may ultimately be, a great deal of credit is due to Dr. Coffey for the experimental work that he has done. Equal credit is also due for the more extensive experimental work that Dr. Barber has done.

I think, Mr. Chairman, a very important part of Dr. Barber's paper which may not have been made clear is the relationship which he draws between the neuromuscular tubes of the genito-urinary system and of the alimentary canal, in reference to dilation. Those matters in the future should receive more attention than they have in the past, and dilatations of the hollow viscera can be understood only through the interpretation given by comparative mammalian experimental studies. The close relationship between, a dilated stomach and a dilated kidney will thus become clear.

Dr. Granville MacGowan, Los Angeles: Dr. Cabot, what do you mean exactly when you say that your patients are not well after the operations?

Dr. Cabot: I mean they are not cured of their difficulties. A majority of the patients who were reported as well now have stone in the kidney.

Dr. MacGowan: Did you originally take all of the stones out of the kidney or have new stones formed?

Dr. Cabot: I have no data on that.

Dr. Martin Krotoszyner, San Francisco: In connection with Dr. Cabot's statement that in 14 per cent. of his cases of nephrolithiasis no blood or pus could be found on repeated and persistent urinalysis, I would like to ask if the search was made immediately or shortly after an attack of kidney colic? I have always looked on the findings of microscopic blood after an attack of renal colic as an important and, occasionally, the only guide to a correct diagnosis.

Dr. Hugh Cabot, Boston: Dr. Barber's work seems to me an important piece of experimental work on the question of the formation of a valve, and yet I do not believe that the creation of a valve will prove to be a matter of any importance.

I am thoroughly familiar with Dr. Coffey's work, which was based on a most ingenious conception, skilfully worked out. He has just commented on the fact that the common duct, and I believe also the ureter, was found dilated above the implantation when done by former methods, and he therefore concludes that this is satisfactory evidence of undue resistance at the intestinal end. With this conclusion I am unable to agree. We have, during the last four years, had a good many cases in which implantation of ureters was necessary and the most striking single fact has been the regularity with which dilatation of the ureter has occurred, even in the entire absence of stricture at the lower end. Dr. Barber's paper suggests to me that this dilatation is due not to obstruction, but to injury to the nerve supply of the ureter. We are dealing here with an active muscular organ and not a simple conducting tube. Its nerve supply is unquestionably segmental, and injury to this nerve supply is likely to be followed by paralytic dilatation. This paralytic dilatation will readily become an objectionable source of obstruction. That obstruction in some form is a factor of importance in causing renal infection may readily be admitted without assuming that it is the only or the most important factor. It is my present opinion that the infection takes place generally from the cut end of the ureter and by lymphatic channels, and that this source of infection, which was pointed out by Stewart and Swett, has been too little taken into consideration. I am interested in Dr. Coffey's conclusion based on his communication from C. H. Mayo to the effect that infection of the kidneys has not taken place in the cases in which his method was applied. In consideration of the great difficulty of drawing conclusions as to the integrity of the kidney in cases in which the urine is secreted into the bowel, and the well-known fact that extensive kidney infection may occur and exist without producing symptoms, one may be pardoned for being unwilling to accept this evidence as conclusive. We know that important grades of pyelonephritis may show their presence only by a slight trace of albumin in the urine and a persistent bacilluria. We are not furnished with evidence sufficient to warrant the opinion that these kidneys have remained free from infection.

Dr. George Lee Eaton, San Francisco: Mention has been made of the transplantation of the ureter into the appendix. I would like to make a statement in regard to the transplantation of the right ureter into the appendix which was reported to the San Francisco Urological Society some four years ago. I performed the operation of transplanting the ureter into the appendix, as it was impossible to transplant into the bladder, which was injured during a former operation. Up to four months ago the patient has shown no ill effects due to ascending infection, and to prove the kidney is functionating, the least diuretic in the way of water causes an immediate purgation.

Dr. W. F. Braasch, Rochester, Minn.: Dr. Barber deserves a great deal of credit for the work he has done in demonstrating certain facts concerning the physiology of the ureter. The outcome of the operation for ureteral transplantation depends, largely, on whether or not the kidney becomes infected. Renal infection will usually be the direct result of obstruction in the urinary drainage. If drainage from the kidney is obstructed, infection will follow. The degree of natural resistance will also be a factor in overcoming a slight interference with drainage. I believe that the success of Dr. Coffey's operation is due to the fact that the urinary drainage has not been interfered with. In regard to Dr. Cabot's paper, it is unfortunate that he has confused the consideration of stone in the kidney with that of stone in the ureter, since they may have widely different symptoms and pathology.

In regard to the number of stones found on either side, I believe that in a large series of cases it will be found practically equal. As far as the proportion of occurrence in the male and female is concerned, it is undoubtedly true that urinary lithiasis occurs much more frequently in the male. The same is true with the various forms of renal infection. I am under the impression that the similar relative proportion in lithiasis and renal infection is corroboratory of the fact that a like etiologic factor exists in both conditions.

Dr. Hiram R. Loux, Philadelphia: I was much gratified to hear the report of Dr. Coffey. It has an important bearing on the momentous question pertaining to conservatism in surgery. I believe that frequently one may save a kidney, whereas it is possible to sacrifice it unnecessarily. After the discussion this afternoon, and the reports of these cases, and the methods of transplantation, I think the tendency of this meeting is toward transplantation. I believe, however, that as Dr. Braasch just stated, it is a question of resistance added to the question of infection of the ureter as to whether the recovery is complete or whether we have an early infection higher up.

Dr. W. Howard Barber, New York: This brief paper on anastomosis has simply been a surgical study of the transplanting of the ureter physiologically. We all enjoyed Dr. Coffey's excellent description of his operation. It is interesting that Dr. Coffey secured better results when he made his anastomosis somewhat oblique after the manner suggested by the common bile duct entrance.

Last summer Dr. Braasch, at Atlantic City, commented on the care with which the Coffey operation was done, and contended that in that way the neuromuscular control of the ureter had been preserved. The importance of the neuromuscular apparatus of the ureter was brought out then by us and finds present agreement in the remarks of Drs. Cabot and Draper.

Dr. A. J. Crowell, Charlotte, N. C.: What percentage of stone formations in your series have returned, and what percentage followed with infection which caused you to claim they are not well?

Dr. Cabot: Of this 49 per cent., how many of them had stones and how many of them had other things?

Dr. Crowell: Yes.

Dr. Cabot: I could not be particularly accurate on that, because the report had to be based on the finding of shadows. The plates showed shadows which we believed to be due to stone, but we do not know they were due to stone. These were cases recently collected for investigation and none of the patients has been operated on.

In reply to Dr. Krotoszyner I will say that many of them were not examined immediately after an attack, for the reason that patients will not have an attack when you want them to. They come to the hospital and you keep them there, put them under a variety of conditions of diet and exercise, and yet they will not have an attack. Send them home and they will at once have one, especially if they live at a great distance. We cannot examine them always in the immediate period of an attack.

In regard to Dr. Braasch's discussion, I am entirely willing to accept his criticism. This would have been a more valuable study had it been divided, but it was not possible to do so. A good many of them were cases of both stone in the kidney and the ureter.

I am not at all in accord with the view expressed by Dr. Braasch in regard to the greater frequency of infection in the male than in the female. I believe that precisely the opposite is true, that renal infection is much more common in the female, but of lesser degree and severity. In the female child the occurrence of pyelonephritis, as compared with the male child, is ten to one. Take the frequency of pyelonephritis in cases of first pregnancy, and the number is very large in my part of the country. We have a large number of cases in women, much larger than at the same age in men. Many of these cases are comparatively transitory, and many of the women have comparatively little trouble for many years. I am not at all prepared to believe that infection of the kidney is more common in the male. I do not believe that infection is an important cause of stone formation. I am inclined to regard renal obstruction of some type as a very important factor.

Improvers of the Race.—There has been an increasing interest in the question of the improvement of the race during recent years. Unfortunately, discussion of the matter has not remained in the hands of competent persons, but pretty much every one who has a babbling tongue or who can scribble, and who either feels it his mission to remake the world, or who has discovered how easy it is to become famous via the cheap magazines, has taken part. Psychology and psychiatry are subjects that have a curious attraction for the eccentric, the borderland insane, the half educated, and the emotional, and as many people of these types have a ready tongue and pen, a great deal of harmful as well as harmless silly stuff has been printed. We in this country suffer more than some other parts of the world from self-appointed improvers of the machinery of the universe, because every man's opinion is as good as another's in a democracy, and . . . because the political and scientific paranoiacs, who seize every opportunity to be in the front of every popular movement, and sometimes for a time succeed, always have a large following.—Charles W. Burr, M.D.

FRACTURES

NEW IDEAS AND NEW INSTRUMENTS*

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INDIANAPOLIS

It is fortunate that a paper on new surgical treatment of fractures does not imply that all fractures shall be treated by open surgical methods. However, it does imply correctly that neither the closed nor open methods are as efficient as they should be. Within a short time the entire subject of closed treatment will have to be rewritten on a selection of entirely different basic mechanical principles.

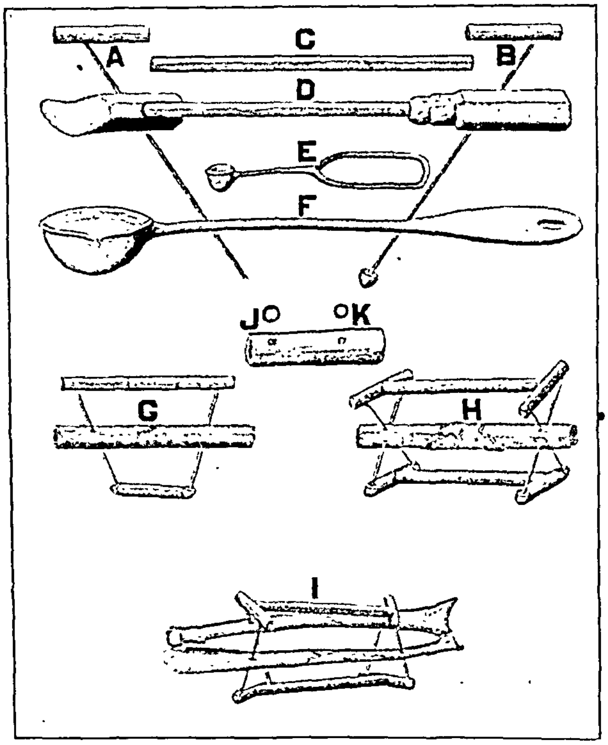

Fig. 1.—*A, B,* bone pins with low melting alloy handles (160 F.). The drill point on *B* has cast on it an alloy button used to couple it with another drill point. *C,* a bar of low melting alloy for joining drill handles in case they are not long enough to reach each other without such extensions. *E,* ladle for casting alloy buttons on points of drills. *F,* a large ladle for melting alloy over flame or in hot water. *J, K,* different shaped holes, *J* due to reciprocating movement of flat drill, *K* due to continuous rotation of any form of drill. *G,* diagrammatic scheme for holding fragments of broken bones in accurate reduction. The two pins do not lie in the same plane. Each represents a scheme for holding fractured ends by using constant normal distance rods. *I,* fracture of radius and ulna. Note the process of preserving normal length and proper separation of fragments. No rotation, angularity or overriding is permissible under this system.

The conventional methods still in practice, since the days of Columbus, when the world was flat, depend on most excellent mechanical principles. These principles, sound and unalterable as they are, happen to be absolutely inappropriate for the mission expected of them. Their absolute soundness does not guarantee their appropriateness any more than the unsoundness of ancient argument guaranteed for us a flat earth. Man alone is responsible for the misuse of judgment in selecting inappropriate ways and means.

In new open surgical treatment it is naturally consistent to find a composite mixture of modern sparkling ingenuity within the calcified shroud of St. Christopher. Surgical ingenuity is not efficient because of ingenuity alone. It must be coupled with additional qualities in order to be sufficient. A Lane plate for instance, involves a trace of ingenuity; but, in my opinion, to leave a foreign body permanently embedded in a wound borders on bad surgery, whether that permanent foreign body be a pair of forceps or a pair of spectacles or a bunch of screws, loose or penetrating the holes of a steel plate. To leave a foreign body permanently embedded in a wound is at least an unnecessary procedure.

Up to the present time we have seen outside and inside bone splints of various kinds. Those outside remain dry, those inside wet, of course. Now comes a new variety of amphibious appliances existing both inside and outside at the same time. There are several varieties A few will illustrate the generic qualities of all. They are protruding nails elevating, depressing and anchoring cleats, protruding wire loops thrown around bone and secured to an outside straight edge, and, lastly, the bone gimlet with its low melting alloy handle. All of these devices are amphibious, that is, they extend from bone out through soft tissues into the open air. They are all silver or silver plated, with polished smooth sides. After union occurs, they have served their purpose and are removed without secondary surgical operation. They do not remain as permanent foreign bodies. To install them, the length of incision and the amount of dissection about the bone is greatly reduced. They do not come in contact with the fracture zone. They do not compress periosteum

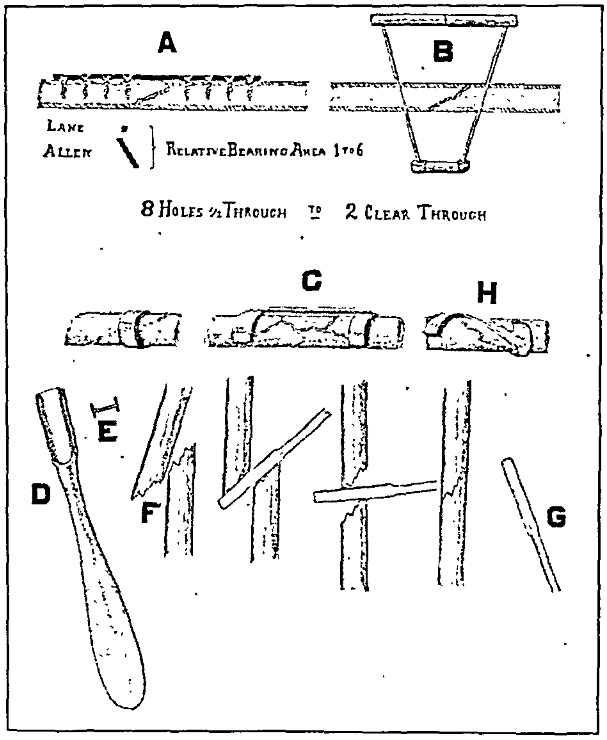
A
B
Lane
Allen
Relative Bearing Area 1 to 6
8 Holes ½ Through to 2 Clear Through
C
H
E
D
F
G

Fig. 2.—*A,* Lane plate with eight screws all parallel; only one-sixth of their entire length traverses hard bone. The portion within the canal of the bone is hopelessly without function. *B,* Allen system, providing long, hard, bony bearings and providing outside control over inside conditions. *C,* bone cleats welded cold on bone. *H,* metal welded on ordinary calling cards without burning the cards. *D,* Allen's bone-adjusting lever. *E,* cross-section showing the I-beam features which prevent bone fragments from slipping laterally. *F* to *G,* methods of using lever in overriding bone displacement.

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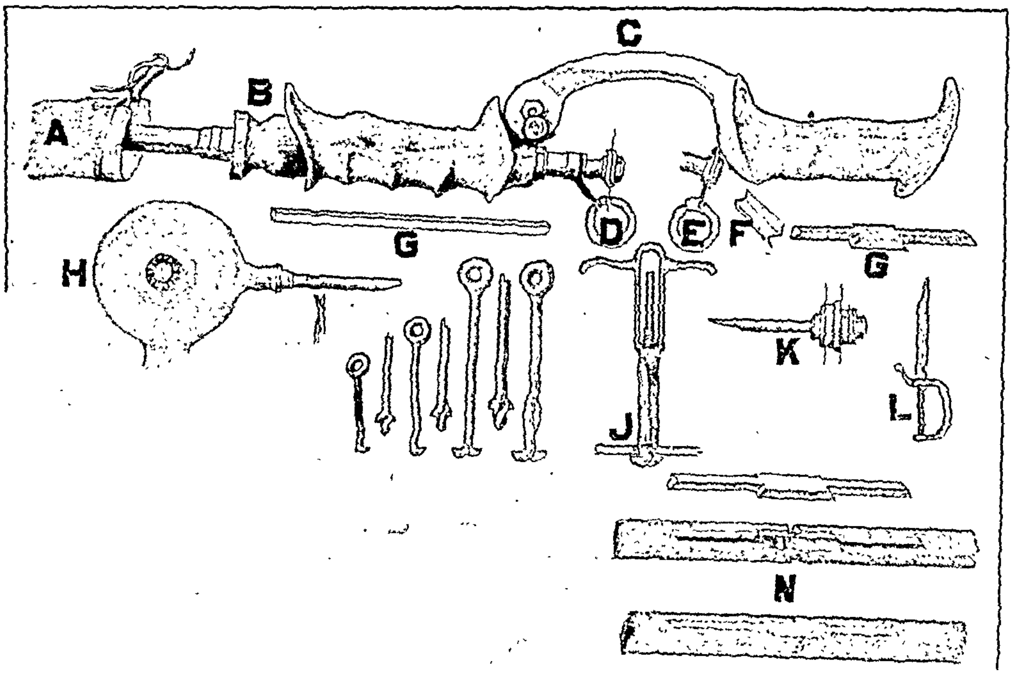
* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

or bridge across fractured areas. They are applied remote from the fracture zone unless desired to traverse it. They are not inadjustable, but at all times provide excellent outside control over inside conditions, and up to the present time, no case of infection can be attributed to them, although in my hands and in the hands of others, they have passed through external pus areas without producing deep or internal infection.

To say that children and patients of all ages do not suffer or complain while wearing these transfixing or protruding devices would at first suggest straining a point in veracity; but, on second thought, you may correctly compare these devices to deep sutures. If your patients do not complain of pain from their deep sutures, they will not complain from these protruding devices, because, at the time of their application, all soft tissue strain is relieved by overstretching or by insignificant incision. Furthermore, a suture has a compression and constriction element, which is here absent. From the foregoing suggestions and other



saw assembled in the process of cutting a wedge-shaped
A, sterile sleeve to cover driving cable from motor to saw.
motor desired; hand-driven motors are by no means to be over-
regardless of electrical conditions. *B*, junction of driving cable from
nife or spoke shave type of saw. *C*, movable or lockable left handle.
tting device assembled. *E, F*, different devices for cutting wedges. *H*, dowel
elevation and depression tools with their countersinking shouldered drills.
ting tool attachable to saw. *M*, telescopic bone grafting scheme.
ne graft.

and from your future
hake the statement that
y free from pain.
or the first case of infection, it may
call that, of all safe drainage material,
surpasses silver, and of all known methods
ainage, none excels through-and-through drain-
The combination of through-and-through silver
drainage may play a very important part in the absence of infection.

The use of protruding nails, cleats, etc., and wire loops secured to outside straight edges is self-evident after a moment's observation of the illustrations, Figures 4, 5 and 6. My practice with the wire loops is to use soft steel wire silver plated. The loop passing around the bone should never constrict the bone or the periosteum. It should have as near 180 degrees bearing on the bone as possible. As it enters the skin it approaches the bone at a tangent, passes 180 degrees around the bone, and then leaves as a tangent out through the soft tissues and skin to its outside straight edge attachment. In case more bearing is essential, at least 60 degrees of unrestricted circumference should be provided. In this event the wires must be twisted five times on each other to the right. Then in order to remove them, after bone union occurs, they are to be untwisted five times to the left, and the loop pulled out. (Fig. 5 *A, B, C, D, E, F*). In employing silver plated wire nails, one should be sure to use very long thin "finishing nails." The heads protrude far enough so that a good hold may be taken on them with extracting forceps, as they sometimes become tightly *embedded*. (Fig. 4 *B*).

The flat silver plated drills with their alloy handles may be used with or without an exploratory incision over the zone of fracture. Usually, I make the incision in order to secure an absolute and accurate reduction, and I should announce here that absolutely accurate maintenance of reduction is possible with this system of treatment. The bones are brought into absolute reduction, the bone adjusting lever being used if necessary. (Fig. 2 *D, E, F, G*.) The exploratory incision provides digital and ocular inspection. The bone pins are passed through the bone an inch or so on both sides of the fracture zone. While the reduction is held absolute and accurate, the low melting handles are brought into line, touched with the soldering iron and the ends are fused together. The operator releases his hold on the bones, and they remain locked in absolute reduction as if by magic. An alloy button is then cast on the end of each drill, and a segment of the alloy fused to each button, thus affording additional stability in locking the broken ends tight together. The exploratory wound is sutured, and a wet antiseptic dressing is applied over it and around the projection of each transfixing pin. It must be remembered that no two pins should lie in the same plane. It is difficult to put them parallel and in the same plane. Fortunately, the easy unparallel way is the correct way, and the more the drills depart from parallelism, the more secure this system becomes. If a carpenter desires to make a studding stand erect on a floor he does not drive all of his nails parallel or in parallel planes. He "staggers" or "toe nails" the nails into place, and the studding "stays put." A Lane plate and all similar devices depend on parallelism of screws. (Fig. 2 *A, B*). Furthermore, the screws have only from 1/16 to 3/16 inch bearing for their threads. The long end of the screw projects into the bone canal or fragile cancellous tissue, and is totally an absolutely devoid of function. The transfixing pi have bearings in both layers of hard bone, which a more remote from each other than the diameter of the bone. This is due to the fact that the drills pass obliquely through the bones.

Every man who has bored round holes in bones for wires or screws or nails knows from his roentgenograms and secondary operations that in about a fortnight these round holes have become oval or egg shaped. With a Lane plate there is no chance to take up the slack. With the transfixing pins one has absolute outside control over inside conditions and can take up as much slack or correct as much rotation as desired without a secondary surgical operation. One merely melts or cuts the handles apart on one side, separates or rotates them as one likes, and then fills in the gap between the handles with a drop or more of the low melting alloy. When the Roentgen ray shows bone union, one is at liberty to melt the alloy off of both ends of the drill rods, paint the rods with iodin, and allow them to dry thoroughly, when they will be easily pulled through the holes originally made. These holes, it must be remembered, form a free working hole through both hard and soft tissues. Gentle traction with the fingers is sufficient to extract them. The alloy melts at about 160 F., so that warm water will melt it; or if one is in a hurry, the knife-bladed soldering iron may be used. (Fig. 1 *D*.) Twist drills and continuous rotation with flat drills should not be used; they should be sent through the bones with a reciprocating movement passing through a working arc of about 165 degrees and not through as much as 180 degrees (Fig. 1 *J, K*). In this way two things happen: the nerves and blood vessels are pushed aside, and the hole through the bone is not a complete circle, but has a pair of internal opposed bone ridges which guarantee a tight fit against the drill shaft as shown in the illustration. A twist drill with its uninterrupted rotation not only drills a round hole, but also will wind up and extract loose soft tissues on itself.

Concerning bone grafts, I desire to present two methods. One is known as the telescopic bone graft and the other as double opposed wedge graft, which automatically locks itself and the fractured bones together (Fig. 3 *M, N*).

If a portion of a shaft of a long bone is absent, the gap may be bridged as follows: A deep canal or tunnel is drilled into the axis of the longer fragment, and a shorter canal into the shorter fragment; a long dowel pin is turned up to fit the bored canal, the dowel pin slipped down into the long canal, the two canals brought into line and the dowel pin worked toward and well into the short canal (Fig. 3 *M*). The short end is pinned with a transverse bone pin, and then when the broken bone is pulled to its normal length, the long telescoped end is secured with another transverse bone pin as shown in Figure 3 *M*. If desired, the dowel pin need not be circular, but may have a flat side with periosteum still intact. The ends of the periosteum may be stripped up and put in contact with the periosteum at each end of the fracture.

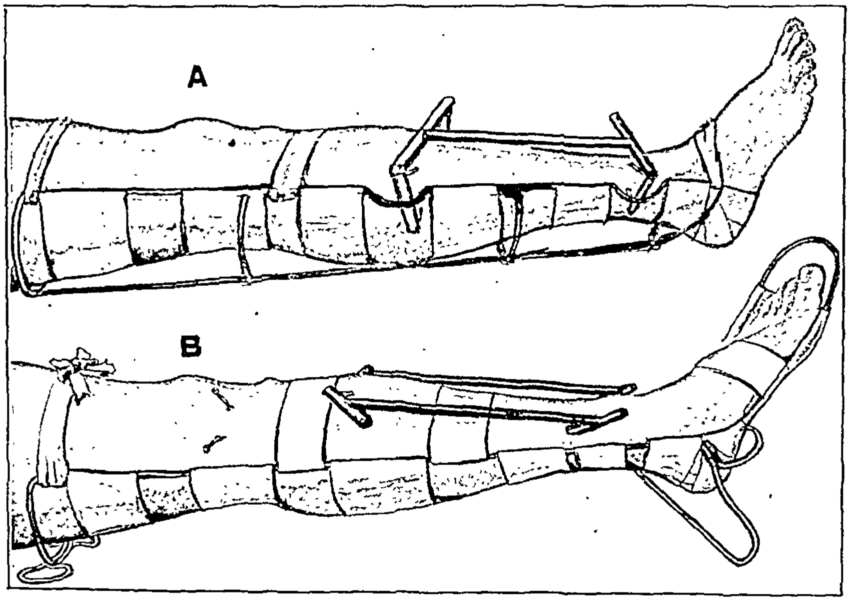


Fig. 4.—*A*, wire and adhesive plaster brace used in connection with bone pins and constant distance rods in treating a shattered tibia and fibula. *B*, use of protruding nails in securing broken off portion of the tibial head; also constant distance rods and bone pins with low melting alloy handles. Note that the wire brace among other duties keeps the bed clothes from resting on the foot and also prevents the leg from rolling.

Another interesting bone graft is the double opposed wedge graft. It involves the use of a wedge-cutting saw, like the one presented, which has two different ways of cutting wedges, as shown in Figure 3 *A, B, C, D, E, F, G*. The male wedge and the female, or the positive and negative wedges, must be accurately cut. The ends of the wedges are cut with opposing wedges or bevels. The broken bone is pulled far enough apart to let the wedge drop into place (Fig. 3 *N*). The traction is then released, the soft parts drag the bone fragments tight into place, and by the double opposed keystone or opposed wedges the bones are locked in place, requiring no bone pins to hold them together. Before attempting this operation, one must become adept in accurate bone cutting. In this form of graft the periosteum may be left intact throughout the entire length and breadth of the graft.

The last method of bone cleating may have some novel features of unusual interest. It consists of a process of welding any desired metal on a bone in the form of a cleat or key or wedge or "C" clamp or any pattern desired. The metal to be used is atomized and the minute particles of metal are impelled against the recipient area until they are welded cold on each other to any desired thickness. The specimens presented to you show the bone is not burned. The periosteum of one bone is still intact, although it is scraped away from the other bone. The pasteboard calling card has metal welded on it, although the card is not burned (Fig. 2 *H*). Around one of the bones a German silver band is welded; about the other is a band first of steel, then copper and then brass; then on this practically any other metal may be welded on cold. Interesting as this may be, I cannot recommend its use, because any foreign body permanently left in a wound is, I believe, not only unnecessary but borders very closely on bad surgery.

Concerning the splints used in connection with all of these new methods, I cannot refrain from making an appealing request. Please use wire and adhesive plaster braces or splints. They are simple, light, strong, sanitary, cheap, durable, adjustable and betray the first requisite of new fracture work. If a man is not mechanic enough to make these little things, he is unfit to attempt accurate fracture work. When you go home buy some tinned steel wire and practice making them. They do not hide the work you should be proud of, but leave it always open for free examination and inspection. You can treat other conditions aside from fractures with wire and adhesive plaster appliances. They are appropriate to many deformities and make excellent framework over which gauze may be stretched in employing open air treatment. The gauze is kept from the wound or lesion and the gauze is a filter against dust. When you learn to use them, no one can lead you back to plaster of Paris. In the new treatment of fractures I most certainly include these new wire braces among the new ideas and new instruments.

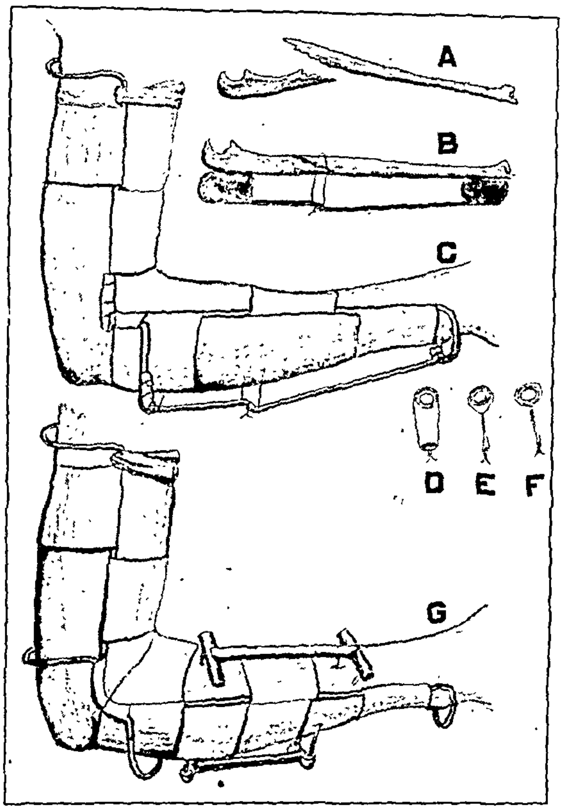


Fig. 5.—*C*, wire and adhesive plaster braces used in connection with the wire loop method of treating fractures. *A*, *B*, conditions of fracture and the three lever points essential to fixation. *G*, wire brace and bone pins employed in fracture of both radius and ulna.

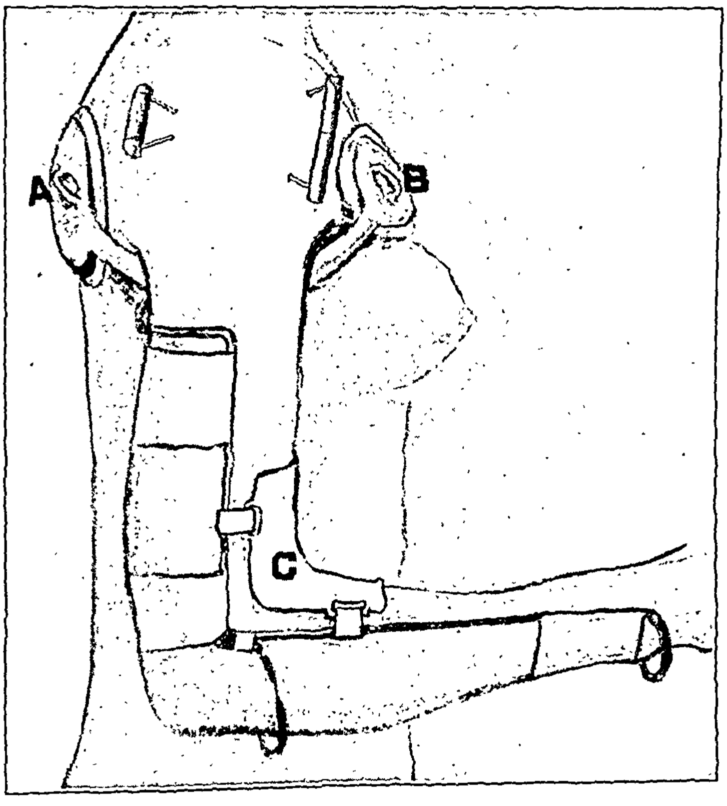


Fig. 6.—Brace and bone pins for fracture of head of the humerus. The pins prevent rotation of the fractured head on shaft. Absolute and accurate maintenance of reduction is possible by this method. The crutch under the arm and the anterior elbow plate provide fixed points for the application of fixation forces. In case the axilla is burned or from other causes cannot be used for superior fixation point, adhesive bandages upon the back, abdomen and side attached to loops *A* and *B* constitute a stable superior fixation base which may be depended on.

ABSTRACT OF DISCUSSION

Dr. P. C. H. Pahl, Los Angeles: I read an article by Steinman in which he said he produced traction on the tibia, fibula and I think also the femur by means of nails passed through the bones. It has occurred to me many times that there were cases of fracture of both tibia and fibula and of the femur in which it was very difficult to produce traction by the means of adhesive plaster. Sometimes the adhesive plaster irritates, and sometimes the tissues are lacerated. When there are many fragments, bone grafts and Lane plates are out of the question; traction then is the only thing, and in order to gain this I have made what I have called a spine tractor—two thorns that go into the bone through little incisions, and then traction is applied. I have done this in twenty-one cases. I am very sorry to say that two of the patients subsequently died, although I did not personally have absolute control over them. It is possible to produce traction, and I have produced as much as 65 pounds in the beginning and gradually reduced this to twenty-five pounds, the treatment lasting for two months and a half. I did this in a Mexican who had a fractured femur, in the upper end, in which there were five fragments. Personally, I have not had the experience which warrants cutting down to the bone on a man who has five fragments in his femur. In this case I put the spines into the condyle of the femur, making the traction vertical, with the leg flexed. I have never been able to make traction vertical with the knee extended, but with the knee bent, it is possible to do so. The first traction was so much that the patient was lifted up in bed, and, of course, there was much lack of apposition, but finally the fragments came into proper position, and the man got a functional leg. What Dr. Allen says about positive fixation has also occurred to me. I have an instrument which I call a "multiple spine splint." I made one for the tibia. I place two spines on the lower end and two on the upper end of the fibula and tibia. I make, if necessary, a small incision over the fracture, reduce the fracture, and then tighten these four spines, or two sets of spines, which really make a bone vise. These cases were all satisfactory. I must say, however, that prejudice against them is very great, and in a municipal hospital where there are many men, it is almost impossible to use them.

Dr. H. M. Sherman, San Francisco: I was much impressed with one statement which Dr. Allen made, and that was the fact that he never got infection. Now a long time ago I began to nail the neck of the femur in fractures of that part of the skeleton, and it always became infected if the nail head was on the surface. Longer ago than that, Parkhill devised this scheme of fastening bones, but all the openings which passed through the skin became infected. The Lambotte scheme, and all the variations and modifications of that, where a drill point or a nail goes through the skin and then into the deeper tissues and remains there, always call for infection. We are now making what we call skeleton traction by a pin through the femur, instead of a Buck's apparatus, and it is a method by which we always get local infection. Dr. Allen says he puts those bits of wire pegs through an infected area into the deeper parts, and never gets an infection. I want him to tell us how he avoids infection, because if he will tell us that, he will put into our hands not only his own apparatus, ingenious as it may be, but he will give us the most important piece of information in his possession—one for which surgery is anxiously waiting—and we will all begin to look around for mechanical ideas and will be able to take care of fractures as easily as he.

Dr. Allen cites the fact, which is perfectly well known, that a screw in a bone bearing weight always causes a necrosis of the part of the bone against which it is pressing so that the holes become oval; and they become even more than that; they become quite large places. I put two screws in a dog's bone, setting them in the bone very firmly, about an inch apart, and then put a little elastic band around them and sutured the wound. The wound healed and in about a month I opened it and found that both of those screws had been pulled out of the bone by that little elastic. The pull of a little piece of india rubber was sufficient to make a round hole oval, and then to pull the screw out of this oval hole. Does not Dr. Allen get the same kind of pressure, absolutely, with the wire pegs which he puts through the bones, so that we can expect the same results under these circumstances? These are things I should very much like to have Dr. Allen explain to us.

Dr. H. R. Allen, Indianapolis: Dr. Pahl suggests the inadvisability of cutting down on a femur fractured in five places. Such a case should be treated by the application of fixation forces for fixation purposes. If any fragment remained uncontrollable under the closed method it could be cut down on and treated by the open application of fixation forces for fixation purposes. We must not delude ourselves by thinking that the irregular muscle force is in any sense a balance or counterpart of a constant force. The application of a constant force through a weight and pulley implies motion of parts desired to be kept quiet and fixed. The application for fixation forces implied absence of motion and the presence of fixation. To oppose the constant force of gravity by the irregular force of muscle necessarily leaves a plus or minus balance of force resulting in motion. Fixation forces are not concerned with motion. Dr. Sherman presents two good points: one refers to the application of a rubber band and the other to the possibilities of infection. A rubber band, of course, while inactive is inert, but during activity it represents a constant force and must be dealt with according to its own generic qualities of constancy. Concerning infection, or rather the absence of it, I am inclined to believe that my good fortune in this regard has been influenced possibly by the technic employed. The operation field should be scrubbed with soap and water, rinsed with mercuric chlorid solution, then washed with alcohol and painted with iodin, which is removed with ether. Every instrument, in fact everything, is wet with mercury solution while it is near or in contact with the wound. Each wound is thoroughly irrigated with mercuric chlorid solution, and after suturing with mercuric chlorid soaked silk a wet mercuric chlorid dressing is applied and maintained as a permanent dressing. I believe in the use of mercuric chlorid. I also believe in through and through silver drainage.

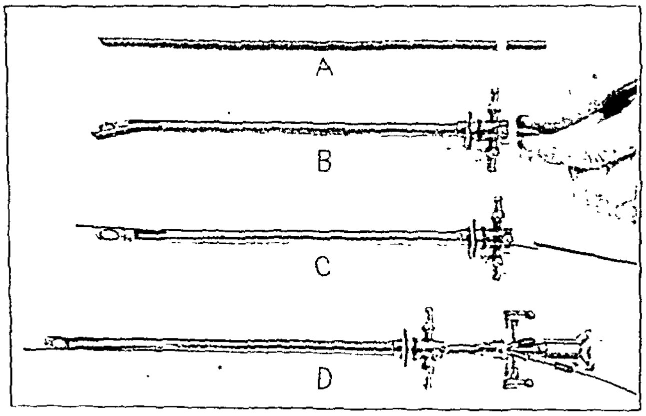


Fig. 1.—*A*. The rubber catheter with distal end cut on an angle of 90 degrees to allow its easy escape from the fenestra of the cystoscope. *B*. Rubber sheath introduced into the outer sheath of the cystoscope and rotated between the fingers to allow its escape from the fenestra. *C*. Wax tip bougie or catheter which has been introduced into the instrument through the protective rubber sheath and held in position while this sheath has been pulled out from around it. *D*. Threading the catheterizing barrel onto the wax tip catheter.

What Is Good Literature?—Unless an author takes the material on which he writes out of his own head, that is to say, from his own observation, he is not worth reading.—Schopenhauer.

I. A NEW METHOD OF PASSING THE WAX TIP

II. MODIFICATION OF THE TECHNIC OF PASSING THE WAX TIP*

BEN R. KIRKENDALL, M.D.
COLUMBUS, OHIO

I. A NEW METHOD OF PASSING THE WAX TIP

In 1894, Howard A. Kelly introduced the wax tip catheter method of diagnosis of ureteral calculi in the female through the open cystoscope. Since then many other observers have attested its value:

First, the wax tip will diagnose ureteral calculi unaided. Second, in conjunction with roentgenoscopy, it will rule out or make positive a shadow in the line of the ureter.

Third, it will diagnose ureteral calculi which have been entirely missed by the Roentgen rays.

Fourth, the gynecologists for several years have been able to locate the site of ureteral calculi by passing a ureteral catheter, with a series of wax bulbs, through the open cystoscope.

Three years ago, Burton Harris devised a method for the use of the wax tip with the male catheterizing cystoscope by passing the wax tip into a filled bladder and threading the cystoscope containing its catheterizing barrel onto the catheter, through the urethra into the bladder.

This procedure excites more pain and produces more trauma than an ordinary cystoscopy by the increased dilatation of the urethra and the liability of the open fenestra of the instrument to scrape or tear the mucous membrane. It requires a separate instrumentation for the introduction of the wax tip, and also requires the removal of the cystoscope before the wax tip can be withdrawn for examination.

A much simpler method with more possibilities is proposed as follows: An ordinary catheterizing cystoscope is used. The lumen of the outer sheath is lined with a loose fitting rubber tube to protect the wax tip in its passage into and out of the bladder. The tube is made from a soft rubber catheter, about a 16 or 18 F. The eye end of the catheter is cut off on a slant or angle of about 90 degrees. On this slant-cut end depends the ease of the following manipulations. The catheter, this end first, is passed into the cystoscopic sheath and out through its fenestra to the beak of the instrument.

The other end of the catheter is cut off an inch from the proximal end of the cystoscope, and it is allowed to protrude for a finger hold.

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* From the James Brady Urological Institute, Johns Hopkins Hospital, Baltimore.

plaster braces or splints. They are simple, light, strong, sanitary, cheap, durable, adjustable and betray the first requisite of new fracture work. If a man is not mechanic enough to make these little things, he is unfit to attempt accurate fracture work. When you go home buy some tinned steel wire and practice making them. They do not hide the work you should be proud of, but leave it always open for free examination and inspection. You can treat other conditions aside from fractures with wire and adhesive plaster appliances. They are appropriate to many deformities and make excellent framework over which gauze may be stretched in employing open air treatment. The gauze is kept from the wound or lesion and the gauze is a filter against dust. When you learn to use them, no one can lead you back to plaster of Paris. In the new treatment of fractures I most certainly include these new wire braces among the new ideas and new instruments.

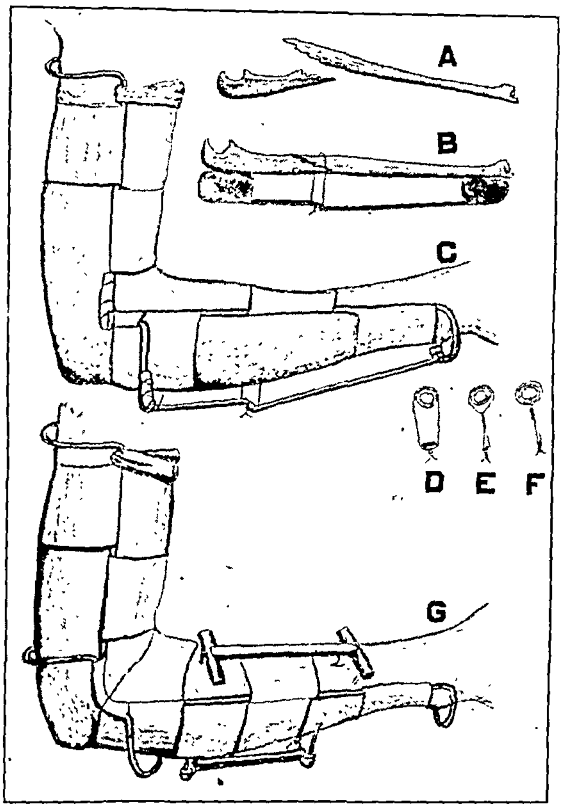

Fig. 5.—*C*, wire and adhesive plaster braces used in connection with the wire loop method of treating fractures. *A, B,* conditions of fracture and the three lever points essential to fixation. *G*, wire brace and bone pins employed in fracture of both radius and ulna.

ABSTRACT OF DISCUSSION

Dr. P. C. H. Pahl, Los Angeles: I read an article by Steinman in which he said he produced traction on the tibia, fibula and I think also the femur by means of nails passed through the bones. It has occurred to me many times that there were cases of fracture of both tibia and fibula and of the femur in which it was very difficult to produce traction by the means of adhesive plaster. Sometimes the adhesive plaster irritates, and sometimes the tissues are lacerated. When there are many fragments, bone grafts and Lane plates are out of the question; traction then is the only thing, and in order to gain this I have made what I have called a spine tractor—two thorns that go into the bone through little incisions, and then traction is applied. I have done this in twenty-one cases. I am very sorry to say that two of the patients subsequently died, although I did not personally have absolute control over them. It is possible to produce traction, and I have produced as much as 65 pounds in the beginning and gradually reduced this to twenty-five pounds, the treatment lasting for two months and a half. I did this in a Mexican who had a fractured femur, in the upper end, in which there were five fragments. Personally, I have not had the experience which warrants cutting down to the bone on a man who has five fragments in his femur. In this case I put the spines into the condyle of the femur, making the traction vertical, with the leg flexed. I have never been able to make traction vertical with the knee extended, but with the knee bent, it is possible to do so. The first traction was so much that the patient was lifted up in bed, and, of course, there was much lack of apposition, but finally the fragments came into proper position, and the man got a functional leg. What Dr. Allen says about positive fixation has also occurred to me. I have an instrument which I call a "multiple spine splint." I made one for the tibia. I place two spines on the lower end and two on the upper end of the fibula and tibia. I make, if necessary, a small incision over the fracture, reduce the fracture, and then tighten these four spines, or two sets of spines, which really make a bone vise. These cases were all satisfactory. I must say, however, that prejudice against them is very great, and in a municipal hospital where there are many men, it is almost impossible to use them.

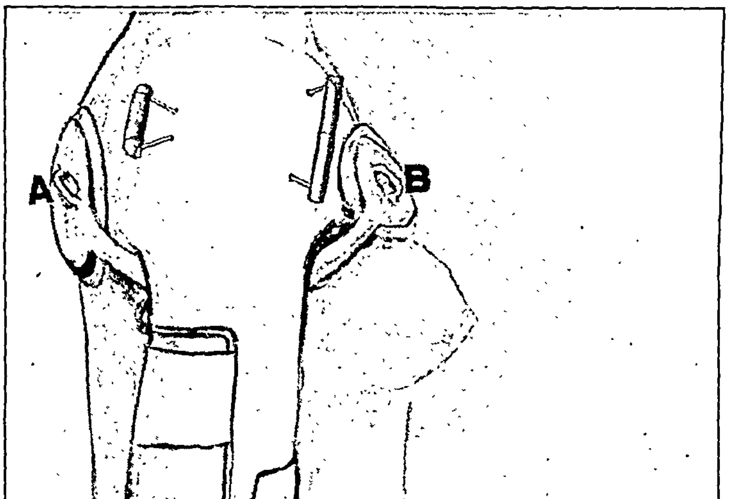

Fig. 6.—Brace and bone pins for fracture of head of the humerus. The pins prevent rotation of the fractured head on shaft. Absolute and accurate maintenance of reduction is possible by this method. The crutch under the arm and the anterior elbow plate provide fixed points for the application of fixation forces. In case the axilla is burned or from other causes cannot be used for superior fixation point, adhesive bandages upon the back, abdomen and side attached to loops *A* and *B* constitute a stable superior fixation base which may be depended on.

Dr. H. M. Sherman, San Francisco: I was much impressed with one statement which Dr. Allen made, and that was the fact that he never got infection. Now a long time ago I began to nail the neck of the femur in fractures of that part of the skeleton, and it always became infected if the nail head was on the surface. Longer ago than that, Parkhill devised this scheme of fastening bones, but all the openings which passed through the skin became infected. The Lambotte scheme, and all the variations and modifications of that, where a drill point or a nail goes through the skin and then into the deeper tissues and remains there, always call for infection. We are now making what we call skeleton traction by a pin through the femur, instead of a Buck's apparatus, and it is a method by which we always get local infection. Dr. Allen says he puts those bits of wire pegs through an infected area into the deeper parts, and never gets an infection. I want him to tell us how he avoids infection, because if he will tell us that, he will put into our hands not only his own apparatus, ingenious as it may be, but he will give us the most important piece of information in his possession—one for which sheath close to the ureteral orifice, and obviates raising the elevator to a greater angle, which would decrease the lumen of the catheter sheath. The small catheter sleeve is removed before the wax bulbs appear outside the instrument. Control wax-prepared bougies may be passed if deemed advisable.

On examination of the prepared bougie after its passage, it is obvious that if there is a scratch on the No. 1 wax tip and none on any of the bulbs, the calculus must lie in or near the renal pelvis. Likewise if all of the wax bulbs are scratched, the stone is within the ureter at or near its vesical orifice; while if some of the proximal bulbs escape the marring, the last one scratched locates the calculus at a corresponding point in the ureter.

This method is equally adaptable for use in the two sexes, and assures the accurate location of ureteral calculus without the aid of the Roentgen ray and will often diagnose calculi missed by it. The bougie being impenetrable to the Roentgen ray, a roentgenogram may be taken with it in place, if thought advisable. This will show the relation of the ureter to any suspicious extra-ureteral shadow.

137 East State Street.

LEUKEMIA—AN INFECTION?

WITH REPORT OF CASES [*]

RAY LYMAN WILBUR, M.D.
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Morphologic studies are so interesting and apparently definite that it is not surprising that there has been a tendency among medical men to spend an undue amount of time on this phase of the leukemias rather than on the more vital one of etiology.

The breaking down of the artificial borderlines of distinction between the leukemias, the leukemic changes in the blood in the presence of established infections,[1] and the variability in the findings in different patients and at different times in the same patient as shown by the report of many writers, notably Klieneberger,[2] Stein,[3] Marchet and Rieux,[4] Reschad and Schilling,[5] Moreschi,[6] Ghedini,[7] Strauch,[8] Morawitz,[9] Warren[10] and Paltauf,[11] have diverted attention more particularly of late to the cause of the leukemic process. We now hesitate to go much beyond the word "leukemia" or "leukemic state" in making a diagnosis, perhaps adding to it "lymphatic type," or "myelogenous type," as the case may be.

While the conception of leukemia as a neoplasm, fathered by Banti and others, is still extant mainly because of the tendency of enlarged glands during overgrowth to involve other structures, and the idea of Naegeli[12] that leukemia is a distinct entity rather than a neoplasm or infection has been welcomed by a few, the general trend of medical opinion seems to be more and more to regard the leukemic process as the result of an infection or a secondary toxicosis of particular parts of the body, primarily the bone marrow, spleen and lymphatic structures. This infection may be due to some one unknown organism, but present information makes it more probable that it can be caused by several different ones when the conditions are favorable. Chronicity of infection with low virulence, but with the liability to acute exacerbations, bone-marrow involvement, one infection preparing the soil for the next, are outstanding features of many of the published reports. Lymphocytosis as distinguished from leukemia has led to confusion, and borderlines are hard to draw. The recovery of patients with marked lymphocytosis or leukemia, as the case may be, has been reported by a number of observers, notably Cabot,[13] Jackson and Smith,[14] Türk,[15] and here in California we have had such patients under observation. Such high lymphocyte counts as those noted in typhoid (Herz,[16]), pneumonia and other ordinary infections (Steven,[17] Cabot,[13] Austrian,[18] Hirschfeld and Kothe[19]), and the leukemic blood changes following bone injury—fracture—and definite bone infection (Simon,[20] Herz,[16] Ward,[21] Stursberg[22]) are more than suggestive. Certainly too little attention has been given to the bone marrow as a nidus for all sorts of infection. The selective action for certain portions of bone marrow shown by the tubercle bacillus as brought out by Ely,[23] together with the lymphocytosis characteristic of that infection, is worthy of note.

Early investigators (Fraenkel, Ebstein) noted the striking resemblance of leukemias to infections, particularly the acute leukemias with fever, hemorrhages, skin lesions, splenic tumor and asthenia. Patients with the type dealt with by McCrae,[24] Lüdke,[25] Hirschfeld and Dünner,[26] Beltz,[27] Strauch,[28] and Nanta and Loubet,[29] are hard to understand on any other basis. Animal (Lüdke[30]) and chicken leukemia (Ellermann,[31] Ellermann and Bang[32]), the passage of the latter through a series of animals, and the apparent leukemic change in the blood of the fowl after inoculation with that from a human leukemic patient (Wiczkowski[33]) have excited much interest. Other inoculation experiments (Sternberg,[34] Fraenkel and Hatluch[35]), the possible contagiousness of the disease as indicated by Obrastzow's patient, the familial character noted at times (Barrenscheen,[36]) and its occurrence in a baby a few days old with a right-sided endocarditis (Pollmann[37]), and the early leukocytosis observed in a number of cases, all indicate infection. Numerous organisms have been described as occurring in the blood or tissues, the seat of leukemic changes. Among these, streptococci have been reported a number of times (Nanta and Loubet,[29] Jochmann,[38] Ziegler and Jochmann,[39] W. Erb, Jr.,[40] Churchill,[41] Sternberg,[34] *Gorjaew,[42] Marchet and Rieux,[43] Stursberg[22]) and* also Auer's bodies (Much and Hegler,[44] E. Fraenkel and Hatluch[35] (quoted by Arndt), Ottenburg,[45] von Domarus[46]). Tubercle bacilli (Nanta[47]), corynebacterium (Steele,[48] Simon and Judd[49]), staphylococci (Herz[16]) and various mixed organisms (Lavenson[50]). Some of these may well be secondary and some, like corynebacterium, are probably common enough in various dead body tissues not to be of well-defined significance. Besides, the question of primary and secondary infection is a most confusing one in this connection (Ward,[21] Neutra[51]). The development of aleukemia in leukemia under the influence of intercurrent disease, pneumonia, diphtheria, etc., is as puzzling as the leukemic states noted in defininte sepsis. The relationship to the status lymphaticus has been considered of much importance (Barrenscheen,[36] Citron[52]) in determining the leukemic reaction to possible infection. Blood-forming tissues, when infected, react in peculiar and as yet imperfectly determined ways. Sternberg has called attention to the frequency of myelocytosis in the course of various infections. Intestinal infections (Oppenheim,[53] Peacock[54]), tonsillar foci (Gilbert and Weil[55]), and the selective action of certain infections for bone marrow present features requiring careful analysis and study.

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[*] Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[*] From Division of Medicine, Stanford University Medical School.

[*] Because of lack of space this article is abbreviated in *The Journal*. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

1. The explanation given by Döhrer and Pappenheim (Folia haemat., 1913, xvi, 145) that this is a special tendency to leukemia on the part of the blood-producing tissues, or a leukemoid reaction of the blood during sepsis (*"einer besonderen leukämischen Prädisposition der hämopoetischen Gewebe,"* or "leukämoide Blutreaktion bei Sepsis") seems inadequate.

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3. Stein, B.: Zur Kenntnis der Aleukämien und zur Therapie leukämischer Erkrankungen, Med. Klin., 1915, xi, 246.

4. Marchet, A., and Rieux, J.: Un cas de leucémie aiguë du type myéloïde, Arch. d. mal. du coeur, 1913, vi, 574.

5. Reschad and Schilling: Ueber eine neue Leukämie durch echte Uebergangsformen (Splenocytenleukämie) und ihre Bedeutung für die Selbständigkeit dieser Zellen, München. med. Wchnschr., 1913, lx, 1984.

6. Moreschi: Leucemia linfatica cronica ed infecione tifica intercorrente, Policlinico sez. med., November, 1913; abstr., Zentralbl. f. inn. Med., 1914, xxxv, 805.

7. *Ghedini, G.: Aleukemic Myelosis, Gazz. d. Osp., 1915, xxxvi, 17.*

8. Strauch, A.: Acute Leucemia, Med. Rec., New York, 1914, lxxxvi, 713.

9. Morawitz, P.: Ueber atypische schwere Anämien, Deutsch. Arch. f. klin. Med., 1906-1907, lxxxviii, 503.

10. Warren, M.: Case of Subleukaemic Lymphadenosis, Proc. New York Path. Soc., 1915, xv, 12.

11. Paltauf, R.: Leukosarkomatose und Myeloblastenleukämie: Zur Kasuistik der akuten Leukämie, Wien. klin. Wchnschr., 1912, xxv, 46.

12. Naegeli, O.: Leukaemie und Pseudoleukaemie, Vienna, 1913, p. 10.

13. Cabot, R. C.: The Lymphocytosis of Infection, Am. Jour. Med. Sc., 1913, cxlv, 335.

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15. Turk, W.: Septische Erkrankungen bei Verkümmerung des Granulo-Zytensystems, Wien. klin. Wchnschr., 1907, xx, 158.

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17. Steven, J. L.: A Clinical Lecture on Acute Infantile Bronchopneumonia, Lancet, London, 1902, ii, 792.

18. Austrian, C. R.: Hyperleucocytosis of High Grade in Bronchopneumonia in a Child, Bull. Johns Hopkins Hosp., 1911, xxii, 298.

19. Hirschfeld, H., and Kothe, R.: Ueber abnorm hohe Leukocytose bei schweren Infektionen, Deutsch. med. Wchnschr., 1907, xxxiii, 1255.

20. Simon, C. E.: Leukemic Blood Picture in a Case of Fracture of the Ankle, Am. Jour. Med. Sc., 1907, cxxxiii, 390.

21. Ward, G. R.: Secondary or Symptomatic Leukaemia, Proc. Royal Soc. Med., 1914, vii, 126.

22. Stursberg, H.: *Zur Differentialdiagnose* zwischen akuter Leukämie und Sepsis, mit besonderer Berücksichtigung der "Sepsis bei Verkümmerung des Granulocytensystems," Med. Klin., 1912, viii, 520.

23. Ely, L. W.: Joint Tuberculosis, New York Med. Jour., 1915, ci, 783.

24. McCrae, T.: Acute Leukaemia *in Childhood, with Report* of a Case, Bull. Johns Hopkins Hosp., 1900, xi, 102.

25. Lüdke, H.: Ueber die Therapie der Leukämie, Fortschr. d. Med., 1911, xxix, 793.

In order to indicate some of the problems involved, and to emphasize that leukemia, although most variable, can readily be explained as due to an infection, the following three selected case histories are of interest:

CASE REPORTS

Case 1.—*Acute leukemia.* (Medical Clinic, Stanford Medical School.) April 2, 1913, H. H., an American office boy, aged 17, complained of swelling of the glands of the neck and slight cough. The family history was excellent. General health had always been satisfactory except for measles, whooping cough and mumps. Patient had had frequent toothache with swelling, the last time a year ago. Three weeks and a half ago he had pain in the upper part of the chest and swelling in the lower part of the neck, and later enlargement of the glands under the jaw and in the right groin. He noticed that he would spit up a lot of mucus, but no blood, and that his face would be puffed up in the morning, but would go down during the day. The wrists also were slightly swollen and tender. He had had some early morning sweats.

The patient was a well-built and well-nourished boy of good color. Except for the enlarged glands noted in the history, some puffiness about the eyes, hypertrophy of the tonsils and the evident involvement of the upper mediastinum with enlarged glands, no abnormalities were noted.

The blood examinations were as follows:

	April 2, 1913	April 7, 1913
Hemoglobin	80%	90%
Red blood corpuscles	4,850,000	4,980,000
White blood corpuscles	8,800	8,900
Polymorphonuclears	41%	48%
Lymphocytes	54%	45%
Large mononuclears	—	5%
Eosinophils	1%	—
Basophils	4%	2%

(The lymphocytes were mostly large granular forms.)

April 8, 1913, patient was vaccinated because of previous exposure to smallpox.

April 10, a clinical diagnosis of lymphosarcoma was made, and a posterior cervical gland was removed for microscopic diagnosis. The sections showed moderate hyperplasia of lymphadenoid tissue, moderate increase in fibrous tissue which in places showed marked thickening and hyaline change. No evidence of tumor found. Chronic lymphadenitis (Dr. E. C. Dickson).

April 15, although patient seemed to feel well, the blood counts were as follows:

	April 15	April 18	April 19 (Differ. Count*)	April 28
White blood corpuscles	252,000	233,600		440,000
Polymorphonuclears	6%	—	5.5%	2%
Lymphocytes	94%	—	86.0%	97%
Large mononuclears				1%
Myelocytes (fully developed)			1.0%	
Lymphoidocytes			2.0%	
"Kern Schatten"			5.0%	
Eosinophils			0.5%	
Red blood corpuscles				3,925,000
Hemoglobin				66%

* The great majority of the lymphocytes were from 6 to 8 microns in diameter, but a few microlymphocytes were present, and a large number of macrolymphocytes.

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27. Beltz: Ueber Leukämie mit besonderer Berücksichtigung der akuten Form, Deutsch. Arch. f. klin. Med., 1913-1914, cxiii, 116.
28. Strauch, August: Acute Lymphatic Leukemia in Early Life, Am. Jour. Dis. Children, January, 1913, v, 43.
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30. Lüdke: Ueber experimentelle Erzeugung leukämischer Blutbilder, Folia haemat., 1910-1911, x, 10.
31. Ellermann, V.: Untersuchungen über das Virus der Hühnerleukämie, Ztschr. f. klin. Med., 1914, lxxix, 43.
32. Ellermann, V., and Bang, O.: Experimentelle Leukämie bei Hühnern, Ztschr. f. Hyg. u. Infektionskr., 1909, lxiii, 231. Ellermann, V., and Bang, O.: Experimentelle Leukämie bei Hühnern, Centralbl. f. Bakteriol., 1908, xlvi, 595.
33. Wiczkowski, J.: Beitrag zur Lehre über die Leukämie, Wien. klin. Wchnschr., 1913, xxvi, 569.
34. Sternberg, C.: Ueber die *akute myeloische* Leukämie: Staphylokokkenversuche, Wien. klin. Wchnschr., 1911, xxiv, 1624.
35. Fraenkel, E., and Hatluch, quoted by Arndt, G.: *Diseases and* New Growths of Lymphatic Origin, The Journal A. M. A., Oct. 10, 1914, p. 1271.
36. Barrenscheen, H. K.: Zur Frage der akuten Leukämie, Wien. klin. Wchnschr., *1912*, xxv, *293.*
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40. Erb, W., Jr., Septische Erkrankungen und akute Leukämie, Deutsch. med. Wchnschr., 1907, xxxiii, 833.
41. Churchill, F.: Acute Leukaemia in Early Life, Am. Jour. *Med.* Sc., 1904, cxxviii, 565.
42. Gorjaew, N.: Zur Leukanämie Frage, Folia haemat., 1913, xvi, 1200.
43. Marchet, A., and Rieux, J.: Un cas de leucémie aiguë du type myeloide, Arch. d. mal. du coeur, 1913, vi, 574.
44. Much and Hegler: Weitere Mitteilungen über die Erreger der Leucaemia lymphatica, Folia haemat., 1910-1911, x, 59.
45. Ottenberg, R.: Observations on Acute Leucaemia, with Special Reference to Auer's Bodies, Am. Jour. Med. Sc., 1909, cxxxviii, 562.
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47. Nanta, [illegible] Le rôle [illegible] de la tuberculose dan l'étiologie de la leucémia myeloide, Arch. d. mal. du coeur, 1913, vi, 38.
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52. *Citron, J.*: Ueber akute Leukämie, Deutsch. med. Wchnschr., 1914, xl, 629.
53. *Oppenheim*, E. A.: Anaemia Splenica und infektiöses Granulom, Virchows Arch. f. Path. Anat., 1911, cciv, 392.
54. Peacock, A. H.: A Study of a Case of Splenomyelogenous Leukaemia, Am. Jour. Med. Sc., 1904, cxxviii, 893.
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Degenerative changes were present in a large number of the cells—vacuolization and karyokinesis.

A small percentage of the large nongranular cells classed by Pappenheim as lymphoidocytes were found.

No myeloblasts or intermediary myelocytes were found, and the fully developed myelocytes or propolymorphs found were probably due to secondary bone-marrow irritation. No nucleated reds were found. (Dr. T. Addis.)

The patient was given Fowler's solution and Roentgen-ray exposures.

May 3, patient began to bleed freely from the nose and throat, the blood coming from about the uvula and the tonsils. There was a dull pain noted in the region of the spleen. Liver and spleen were both found to be enlarged and sensitive. There was hemorrhagic ecchymosis about the left upper and lower eyelid. Petechiae were noted in the pharynx and about the tonsils. The glands in the neck were distinctly smaller in size. Patient was free from pain, but felt weak and sleepy. He gradually became more restless and sleepless. Temperature ranged between 97 and 100.6 F. After two days of a comatose condition, patient died, May 15.

May 6, blood count was as follows: white blood corpuscles, 514,000; polymorphonuclears, 2 per cent.; lymphocytes, 98 per cent.

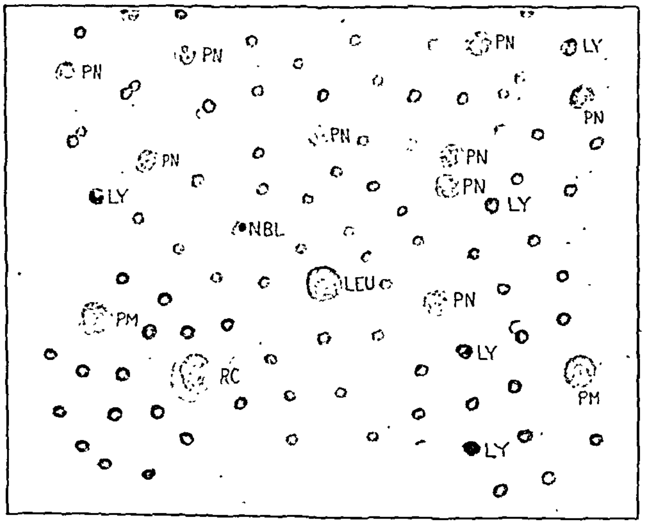

Fig. 1.—Blood, Case 3. Leukemia, myelogenous type, and anemia, pernicious type (?). *PN*, Polynuclear neutrophil; *LY*, lymphocyte; *LEU*, leukoblast; *RC*, Rieder cell; *PM*, promyelocyte; *NBL*, normoblast.

The details of the necropsy record are not available, but a marked enlargement of the mediastinal lymph glands was found and typical leukemic changes elsewhere.

Case 2.—*Acute leukemia.* (Stanford Medical Clinic; Lane Hospital.) C. F., Italian laborer, aged 38, was admitted March 3, 1915, complaining of weakness and loss of appetite. Family history unimportant. General health always good. Smallpox when 12 years of age. Never had cough or respiratory disturbance. Denied venereal infection. Drank wine with meals.

Three and one-half months ago (about Nov. 15, 1914), he began to feel weak and to lose appetite. Thought he had some fever, coughed a little, and noted small amount of blood in the sputum, and sweat considerably at night. About one month ago he consulted a doctor, who told him he had tuberculosis. Since that time cough had almost ceased, but weakness and loss of weight had continued. Had noticed increased thirst and urination. Four days ago he noted marked redness of right eyeball and surrounding tissues, occurring without trauma and without pain.

Examination on admission showed an emaciated man lying flat in bed, somewhat dyspneic. Color very pale. Marked visible pulsation of tortuous temporals. Extensive hemorrhage into right sclera and eyelids. Small ecchymoses in left sclera. Marked pulsation of carotids. Over right sternoclavicular joint was a small hard nodule, not tender, slightly movable. Percussion dulness over manubrium, extending slightly more to right than to left. Heart dulness increased slightly to right and left. Systolic murmur at apex, not transmitted. Slight abdominal rigidity. Spleen felt 5 cm. below costal margin. Slight pitting edema of ankles. Moderate enlargement of epitrochlears, axillary and inguinal nodes. Small areas of old hemorrhage scattered over skin of trunk. Temperature, 102.4 F.; pulse, 108.

Laboratory Reports.—Urine: Specific gravity, 1.015. Trace of albumin. No casts. Very few leukocytes and red cells. Blood: Red blood corpuscles, 1,123,000; white blood corpuscles, 199,600: 90 per cent. lymphocytes; 10 per cent. degenerated. Sputum: Small amount of blood. No tubercle bacilli. Stool: Occult blood present. Wassermann negative. Blood culture negative. Roentgenoscopy revealed enlarged mediastinal shadow and heart.

Course.—Temperature from 99 to 103 F. during first nine days. Fowler's solution, 5 minims, three times a day, was given. White count: March 4, 253,000; March 5, 117,000; March 7, 160,000; March 8, 81,000; March 10, 60,000. Hemorrhage into lids gradually cleared up, and that in sclera became much less. March 9, patient had hemorrhage from nose. March 10, 10 c.c. of wife's blood were given intravenously. Temperature fell to subnormal, and remained there until within a few hours of death, when it rose to 103.4 F.

Diagnosis.—Acute leukemia (lymphatic type); mediastinal glands especially involved.

Necropsy.—The principal items of interest in the necropsy, which was performed by Prof. William Ophüls, were as follows:

Smears and Cultures.—Smear of marrow of rib: Very many lymphocytic cells from two to three times diameter of red blood cells, many nucleated reds (normoblasts), moderate number of neutrophilic myelocytes, small amount of hematogenous pigment. *No bacteria or other parasites found in deeply stained Giemsa specimen in spite of careful study with mechanical stage.*

Smear of marrow vertebra.—Even fewer neutrophilic, eosinophilic and basophilic myelocytes. The rest of the cells have round nuclei of varying size, a very delicate finely granular protoplasm, the granules staining mostly blue with Giemsa, few of the very fine granules more reddish. Same cells but not quite so large in smear of rib.

Culture of mediastinal tumor; no growth.

Spleen: Many similar cells, few neutrophilic myelocytes, *few diplococci.*

Culture: *Many small colonies of diplostreptococci.*

Pericardium over tumor: Many endothelial cells, many degenerated vacuolated cells, *no bacteria.*

Retroperitoneal lymph gland: Many ordinary lymphocytes, few larger cells, no bacteria.

Liver: Many larger and smaller cells like those in bone marrow, few neutrophilic myelocytes, no bacteria. Culture: No growth.

Lung: *Many diplococci.*

Culture: *Many colonies of diplostreptococci.*

Kidney: Apparently nothing abnormal, no bacteria.

Left renal pelvis: The same.

Diagnosis.—Lymphosarcoma of anterior mediastinum. Leukemia, acute. Lungs, edema of, acute. Ganglion near sternoclavicular joint.

Tumor in mediastinum consists of framework of connective tissue in which are many large proliferative lymphocytes which show irregular distribution. Spleen shows pulp full of large lymphocytic cells. Enlarged lymph nodes: Marked hyperplasia of lymph adenoid tissue. Some show beginning leukemic infiltration of capsules.

Smears of blood taken before death show very large number of cells of lymphocytic type with large round, very deeply staining nuclei and narrow rim of hyaline protoplasm which stains distinctly blue and does not contain any granules. In some cells this protoplasm is arranged in knoblike pseudopods around the nucleus, few neutrophilic leukocytes and myelocytes, *one eosinophilic myelocyte.*

CASE 3.—*Leukemia, myelogenous type. Anemia, pernicious (?).* James W., English laborer, aged 60, came to the Stanford Medical Clinic, Dec. 13, 1913, complaining of headache and rheumatism. Family history unknown. Patient had had malaria three times, 1894, 1897, 1907. Denied typhoid and scarlet fever. Had syphilis in 1884. Had had poor teeth; eight or ten had to be taken out. Had always been troubled with frequent colds, but had never coughed up blood or had pain in the chest.

Two months ago, patient contracted a bad cold. This disappeared after two weeks, leaving a nasal catarrh, persistent headaches, pain and stiffness in the shoulders and left elbow which had remained constant. About a month ago a diffuse macular rash appeared on the back, chest, abdomen and thighs, blood-red in color. It gradually faded without producing itching or pain. Patient had lost in weight and appetite, had coughed up mucus free from blood and had had some pain in the precordial region.

Physical Examination.—The principal features of the examination were: a poorly nourished old man with pale skin and mucous membranes, some deafness, many missing teeth with some pyorrhea, some rigidity of the neck, well-developed chest with scattered areas of impairment and a few râles; some enlargement of the heart to the left with a systolic murmur but with no irregularity; peripheral vessels definitely sclerosed, and a chain of enlarged glands along the right brachial artery beginning above the internal condyle of the humerus. There was considerable limitation of movement of the right shoulder joint. On the skin were many sharply outlined elevated, indurated, discrete, reddened papules, varying in size from a pinhead to a pea. Wassermann reaction was found to be negative in the blood and spinal fluid. No tubercle bacilli were to be found in the sputum.

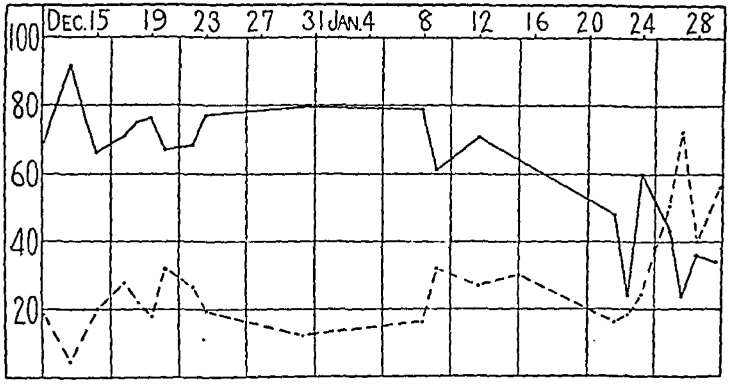

Fig. 2.—Relative numbers of normal and abnormal white cells: solid line, normal; broken line, abnormal.

Urine: Specific gravity 1.021; light cloud of albumin and a few granular casts.

First blood examination was as follows: red blood corpuscles, 5,152,000; hemoglobin, 92 per cent. (Dare); white blood corpuscles, 17,680; polymorphonuclears, 57; lymphocytes, 16; large mononuclears, 1; basophils, 26. The white cells were noted as varying greatly in size and shape.

There was no particular change in the patient for about a week except that the condition in the lungs improved; then he began to complain of a severe headache. The white blood corpuscles were 19,600, with 1 normoblast, December 13; 15,200 white cells, December 30.

December 16, gland removed showed simple, chronic inflammatory changes. The note is made that "the presence of large mononuclear cells with granular cytoplasm is suggestive of myelogenous leukemia, but the chronic inflammatory changes are the most prominent" (Dr. J. F. Cowan).

Later *leukemia of the skin* was diagnosed by Prof. William Ophüls on examination of a specimen removed.

Patient became more dazed with evident cerebral involvement and inclined to somnolence. In a blood culture taken December 26 there was a *growth of diplostreptococci in calcium carbonate infusion broth.*

Blood count, January 8: red blood corpuscles, 2,250,000; white blood corpuscles, 30,000; hemoglobin, 39 per cent.; color index, 0.86 per cent.

Differential Count (May-Grünwald-Giemsa stain):

Polymorphonuclears	58%	Basophil myelocytes	1%
Lymphocytes	11%	Eosinophil geta	2%
Large mononuclears	1%	Lymphoidocytes	1%
Eosinophils	0%	Immitationsform	1%
Basophils	0%	Normoblasts	1%
Neutrophils	23%		

New crops of reddened flattened papules occurred in different parts of the body from time to time, and small hemorrhages occurred about the eyes. The patient's condition varied from time to time, but he recovered from his stupidity and began to feel quite well day by day.

Negative blood culture, January 6. Later patient gradually became weaker, apparent thrombosis developed in some of the peripheral vessels, and patient succumbed January 31.

The following report of the morphologic blood changes was made by Dr. Thomas Addis:

"The routine differential count at the time when the patient was admitted showed the presence of certain atypical leukocytic forms. Further investigation revealed a blood picture of very unusual type.

"The red blood cells numbered 4,560,000, the white cells, 19,600. There were 64.5 per cent. of polymorphonuclear leukocytes, 27.5 per cent. of lymphocytes, 1 per cent. large mononuclears and no eosinophils. In general, therefore, no marked deviation from the usual percentage relationships. But here and there among these normal leukocytes were seen a few cells which gave evidence in their large size, large round faintly staining nucleus, and basophilic cytoplasm with sparse granules, of being in a very early stage of development. These cells were shown by means of the oxidase reaction to be of myeloid origin. They were the progenitors of the myelocytes, and showed as yet no sign of differentiation into neutrophil, eosinophil or basophil.

"Such cells of course are well known from their occurrence along with myelocytes in cases of myelogenous leukemia, and in themselves call for no remark. The point of interest lies in the fact that in this otherwise normal blood they appeared as a more or less isolated group, almost unaccompanied by their successors the myelocytes.

"A somewhat similar anomaly was found in connection with the red blood cells. A first glance at the smear gave *no indication of anything* but a very moderate grade of secondary anemia, but on further study some nucleated red cells were found. There seemed to be here again a want of some connecting link between these undeveloped cells and the great number of almost normal red blood cells.

"The further development is of considerable interest and the details are given in the chronological series of differential counts. In making these classifications the nomenclature of Pappenheim has been followed because the colored reproductions in his atlas have to some extent standardized the terms he employs. His method of using the May-Grünwald-Giemsa stain was closely followed, but quite as good results were obtained with Wright's stain. (Fig. 1.)

"The trend of development of the leukocyte changes is shown in a general way in Figure 2, which gives the relation between the number of normal white blood cells, and the number of the undeveloped leukocytes.

"As can be seen, there was no distinct change until a week before death, when the number of abnormal cells increased in number, so that toward the end there were more abnormal than normal cells. These cells were almost all promyelocytes and leukoblasts. The almost complete absence of fully developed myelocytes, which was noted as so striking in the early counts, continued to the end. On adding the percentages of all the counts made, there are only twenty-five fully formed myelocytes, as compared with 465 promyelocytes and leukoblasts. It appears as though very few of these cells had the capacity to develop into myelocytes. Their fate is probably indicated in the large percentage of unidentified degenerated cells and 'Kernschatten.'

"The red blood cells progressively diminished in number from 4,560,000 to 1,780,000 in forty-six days. At first there was a distinct secondary type of anemia, at least in so far as the color index was only 0.71, but as the anemia became more and more severe, the color index rose instead of fell until the day before death, when it was 0.92. In Figure 3, there is a graphic representation of the numbers of nucleated red blood cells found during the counting of 200 white blood cells. It will be noted that here too, as with the white cells, as the number of normal cells decreased, the number of nucleated red blood cells increased.

"During the last week the number of nucleated red cells was very large, and some enormous basic staining megaloblasts were found. The normoblasts seemed to be breaking down, and many free nuclei were thus liberated. In consequence it became difficult in many cases to distinguish between small lymphocytes and nuclei of normoblasts to which a rim of polychromatophilic cytoplasm still adhered. In spite of these large numbers of early forms of red blood cells, the non-nucleated red blood cells showed none of the degenerative and regenerative changes which are usually found when normoblasts and more especially megaloblasts are present in the blood.

"To sum up, it may be said that the blood presented the remarkable combination of cells typical of an acute myeloid leukemia (lymphoidocytes, leukoblasts and promyelocytes) and of an acute pernicious anemia (gigantoblasts, megaloblasts and normoblasts) together with a large proportion of normal well-formed fully developed cells."

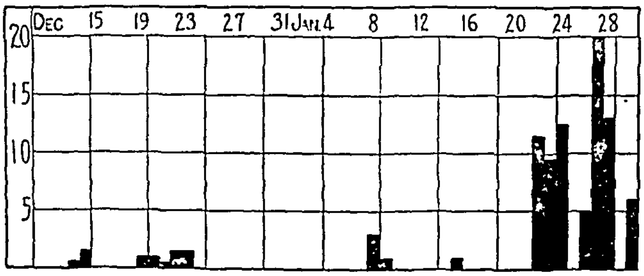

Fig. 3.—Increase in number of nucleated red cells as fall in number of normal cells takes place.

The accompanying table shows the differential counts, red and white cell counts and hemoglobin estimations from the time the patient came under observation to the day of his death.

Necropsy.—The necropsy, of which the following is a record, was performed by Prof. William Ophüls, Jan. 31, 1914.

On opening skull, some dark brown blood escapes from left side. Skull cap is normal.

Strongly built extremely emaciated man of about 60 years. Marked arcus senilis. Skin and visible mucous membranes extremely pale. Teeth fairly well preserved and poorly kept. Marked enlargement of deep cervical supraclavicular and axillary lymph glands on left side. Marked enlargement of glands in both inguinal regions. In skin over chest, both upper arms, belly, thighs and on back are large number of white projecting nodules from just visible to 3 mm. in diameter. Majority are surrounded by hemorrhagic zones. Skin over back of both hands markedly atrophied and full of hemorrhages. Irregular hemorrhagic discoloration of skin on dorsum of right foot. Left foot deeply cyanosed. Tissues shriveled and dry. No edema. Old irregular scars with pigmented margins, largest one 8 by 5 cm. in diameter. Very marked atrophy of subcutaneous fat and muscle. Peritoneum pale, moist. Liver projects 2 fingerbreadths in right mammary line. Stomach and transverse colon in normal position. Appendix back of cecum, which is distended markedly with feces. Marked atrophy of omentum. No free fluid in peritoneum. Numerous small hemorrhages in periosteum of ribs. Diaphragm fifth on left, right-fourth ribs.

Strong adhesions between anterior part of left lung and sternum. In ribs there is very little bone marrow. On pressure there escapes a thin very slightly turbid fluid. Bone marrow of sternum is light grayish red. In some places are large hemorrhages. Fairly easily broken old adhesions very nearly obliterating pleural left cavity. Similar adhesions on right base. Easily broken adhesions on right apex. Few small hemorrhages in pericardium. Extensive, easily broken old fibrous adhesions about spleen. Capsule is irregular, thickened and deeply pigmented, 12.5 by 9.5 by 5 cm. Cut surface of spleen shows brownish-red color with purple spots beneath capsule. Pulp is quite soft.

Heart is of normal size. Large milk spot over right ventricle. Large postmortem clots in pulmonary artery. Wall of right ventricle very thin, dark brown.

Along closing line of posterior part of large, and of small flap of mitral, also on closing line of two of the aortic cusps, are small grayish apparently quite recent thrombotic deposits. Deposits on aortic valves are slightly thicker. Base of aorta and coronary arteries normal. Heart muscle on left side, dark brown and flabby.

Old scars at base of mesentery of sigmoid flexure. Large amount of thin yellow fecal material in sigmoid flexure and rectum. Small amount of light clear urine in bladder.

Diagnosis: Leukemia. Endocarditis, acute. Pachymeningitis, hemorrhagic. Bronchitis, acute. Bronchopneumonia.

Smears: Aortic valve: Many reds, many myelocytes, no bacteria. Mitral valve: Many reds, many myelocytes, *moderate number of diplococci.*

Marrow: Many large neutrophilic myeloblasts, few neutrophilic leukocytes, few basophilic myelocytes, very few eosinophilic myelocytes, few nucleated reds, few large vacuolated cells containing fragments of cells and of nuclei, also some pigment, *few groups of diplococci partly free, partly in phagocytes,* few normoblasts.

REPORT ON THE MORPHOLOGIC BLOOD CHANGES IN CASE 3

	December										January										
	11	13	15	17	18	19	20	22	23	30	8	9	12	15	22	23	24	26	27	28	30
Neutrophil polymorphonuclears	47	64.5	47.5	58	58	57.5	53.5	55	53	59.5	69	48	54	43	38.5	18.5	29	35	22	15	17
Lymphocytes	22	27.5	17	11	15	17.5	12	13	24.5	15	10	14	16	20	9.5	6.5	32	7.5	2	19	16
Large mononuclears	1	0	1	1	1	0	1.5	0	0	5	0	0	1	1	0	0	0	0	0	0	1
Eosinophils	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Basophils	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0	0	1	3	0
Unidentified degenerated cells	9	2	6	0	3	3	1	2.5	2	5	3	7	1	4	8.5	16	0	1	1	10	5
"Kernschatten"	3	1	7	1	2	3	2	2.5	1	3	1	0	1	3	26.5	41.5	13	5.5	1	14	3
Metamyelocytes (neutrophilis)	3	0.5	1	4.5	0.5	0	0.3	4.3	1	3	1	1	5	8	2.5	0.5	1	4.5	5	2	3
Neutrophil myelocytes	1	0.5	1	2.5	2.5	5	0	3.5	0.5	0	0	1	0	1	0	0.5	1	2.5	0	0	2
Eosinophil myelocytes	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0
Basophil myelocytes	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0.5	0	0.5	0	0	0	0
Promyelocytes	5	0.5	15.5	17.5	12.5	12	16	16.5	10.5	3.5	15	14	7	14	4.5	4	3	13.5	7	7	6
Leukoblasts	8	1.5	7	2	3.5	1.5	10	1	5.5	2	1	12	13	6	7	8	18	28	61	28	42
Lymphoidocytes	0	1	4.5	2.5	2	0.5	3.5	1	0.5	1.5	0	3	2	0	2	3.5	2	1.5	0	2	4
Free nuclei of normoblasts or lymphocytes(?)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	20	10	28	19	8	22
Normoblasts	0	0	0	0	0	1	1	0	0	0	1	1	0	0	8.5	3.5	12	2.5	20	10	5
Megaloblasts	0	0	0	0	0	0	0	0	0	0	1	0	0	1	3	6	1	2.5	0	3	1
Gigantoblasts	0	0.5	1.5	0	0	0	0	0.5	1.5	1.5	0	0	0	0	0.5	0.5	0	0.5	0	0	2
Red blood cells (in millions)		4.56	....	....	....	....	....	....	....	....	2.25	..	..	..	....	....	2.00	....	1.86	1.78	..
Hemoglobin (per cent.)		65%	....	....	....	....	....	....	....	....	39%	..	..	..	....	....	33%	....	33%	33%	..
Color index		0.71	....	....	....	....	....	....	....	....	0.86	..	..	..	....	....	0.82	....	0.9	0.92	..
White blood cells (in thousands)		19.6	....	....	....	....	....	....	....	15.2	30.0	..	..	..	9.0	....	9.0	....	28.0	29.0	..

Spleen: Many neutrophilic myeloblasts, few neutrophilic and eosinophilic leukocytes, many small and large lymphocytic cells, no bacteria found.

Microscopic Examination.—Bone: Very cellular marrow rich in myelocytes, periosteum shows marked infiltration with myelocytes.

Spleen: Marked hematogenous pigmentation. Malpighian bodies small; pulp crowded with large myelocytes.

Lymph gland: Marked quite diffuse infiltration with myelocytes.

Heart valve: Shows fibrous cellular thickening on one side covered with thrombus. Thrombus is very dense, free from cells.

Section of skin shows accumulation of myelocytes about blood vessels in cutis.

Abdominal aorta: Large atheromatous ulcer.

Lung: Hyperemic, few pigmented scars. Blood in blood vessels rich in myelocytes.

Kidney shows few small arteriosclerotic scars, many small areas of myelocytic infiltration.

Liver shows moderate filling of capillaries with myelocytes, some also in periportal connective tissue.

Lung shows bronchitis and beginning bronchopneumonia.

Radial artery shows slight arteriosclerosis.

Sections of marrow show large necrotic areas apparently due to thrombotic masses in vessels. Much fibrin between necrotic cells; large hemorrhages at edge of necrosis; also quite advanced organization in some places. No bacteria found in necrotic areas. The adjoining living marrow is crowded with a moderate number of mitoses; myeloblasts; shows few red cells and very few nucleated reds. Very few eosinophilic myelocytes. Scattered throughout the marrow one finds a considerable number of large phagocytic cells which contain fragments of degenerated cells, frequently pigment and finely granular detritus. *In some of these cells groups of diplococci as described in smears. There are also few scattered diplococci free in the marrow.* One of the sections of marrow is somewhat different from the rest (probably section of vertebra, whereas others are from ribs and sternum). In this piece there are no necroses. The proliferation of myeloblasts is still more marked and occurs in the form of small badly defined tumorlike nodules which measure about 2 mm. in diameter. No bacteria found in these slides in spite of continued search with mechanical stage.

COMMENT

We have, then in the foregoing cases one of the acute lymphatic type with mediastinal tumor, a practically normal blood count when first seen and then with the clinical picture of an acute infection, rapidly increasing lymphocytosis, hemorrhage and death, another with similar mediastinal tumor but with a more prolonged course, but so evidently an infection as to be confused with pulmonary tuberculosis; and a third with slow development, typical skin and other reaction and with evidence of the involvement of the whole bone marrow, including the red blood cell forming portions (Pilcher[56]). The bacteriologic studies made of the last two cases were not at all conclusive, but were suggestive. In Case 3 streptococci were found in the blood thirty-three days before death. The early invasion of the bone marrow seems proved by the study of the blood given above, the changes in the white blood corpuscles and the appearance of megaloblasts and normoblasts, together with the progressive anemia. The definite relationship of bone-marrow infection to pernicious and other anemias and to the leukemias is certainly favored by a careful study of this patient. In infections it seems at times as if one part of the bone marrow responds, the red cell forming (Gorjaew[42]), and then in another white cell deviations occur; but here toward the end all parts of the bone marrow seem involved. This is, of course, accompanied by more or less change in the spleen, lymphatic tissues, etc. It is true that while streptococci were found in the marrow after death, they were not so placed as to be clearly present in the lesions characteristic of leukemia. This may be a secondary infection with streptococci, but clinically the picture of a progressive bone marrow infection with primary involvement of the white blood cell forming portions is difficult to lay aside. In Case 2 the streptococci are more evidently terminal invaders. The skin lesions in Case 3, with their surrounding hemorrhagic areas, certainly could readily be interpreted as metastatic (Hitschmann and Lehndorff,[57] Arndt[35]) processes such as we commonly see in streptococcic infections even of low virulence, and they speak for the infectious origin of the disease.

The well-known wide range of activity shown by the streptococcus, and its tendency to obtain and retain a foothold for long periods of years within the body in the endocardium, tonsils, bowel, about the teeth and elsewhere would indicate the strong probability that the bone marrow is often likewise infected and that streptococci may retain a hold there and so induce the more chronic types of lesions associated with leukemia. In California, low-grade diplostreptococci infections are common, such as the characteristically mild rheumatic fever erythema nodosum, probably erythema multiforme, bacterial endocarditis, at least some cases of hyperthyroidism, tonsillitis, intestinal lesions, etc. These, or tuberculosis, or both, may explain the fact that the lymphocyte count, as has been shown by Mehrtens,[58] is apt to be high, at least in San Francisco.

These points with others lend color to the belief that the actual presence of streptococci in the bone marrow has a definite etiologic part to play in the development of the leukemic picture observed. Only by further bacteriologic and perhaps protozoologic studies of the blood, bone marrow, spleen and lymph glands of such patients, and by animal inoculation from the tissues involved, including bone marrow trephined from living bone, can we clarify this problem.[59] If we can force the leukemias into the diseases of known origin we have gone a long way toward the solution of a reasonable and effective therapy. Remedies damaging the bone marrow, such as benzol (benzene, C_6H_6) and chloroform are now in common use, but they are dangerous and usually fail. We must not let the fact of chronicity in many cases divert our attention from the possibility that there is an active, even though mild, infection going on. Unfortunately there is at present not sufficient evidence accumulated to give assurance as to the real cause of leukemia, but we feel justified in the following conclusions:

CONCLUSIONS

1. The evidence thus far available points strongly to infection as the cause of the leukemias. It is probable that organisms usually of low virulence but of various kinds, perhaps working on a soil prepared by

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[56] Pilcher, J. T.: A Contribution to the Etiology of Pernicious Anaemia, Am. Jour. Med. Sc., 1913, cxlvi, 226.

[57] Hitschmann, E., and Lehndorff, H.: Ein Fall leukämieartiger Erkrankung mit schwerer megaloblastischer Anämie und eigentümlichem Exanthem, Ztschr. f. Heilk. Int. Med., 1903, xxiv, 190.

[58] Mehrtens, H. G.: The Frequency of Low Polymorphonuclear Leukocyte with High Lymphocytic Differential Counts, Arch. Int. Med., August, 1913, p. 198.

[59] Hansemann (Berl. klin. Wchnschr., 1914, li, 9) has asked that all such information be reported to him in order that he may assemble all available information pointing to infection as the cause of leukemia.

previous infections, can, when they secure a foothold in the bone marrow, spleen or lymphatic glands, bring about the leukemic reaction alone or combined with disturbance of the red blood cell forming mechanism.

2. Streptococci have been more frequently reported than other organisms in the blood and tissues of leukemic patients.
3. The attempt to classify rigidly the leukemias and pseudoleukemias on purely morphologic grounds is futile.
4. A long series of bacteriologic studies, including blood cultures and bone marrow inoculations from living patients, will be required to settle the relationship of infection to the leukemias as well as the anemias.
5. Foci of infection should be sought, and treatment directed against them. Only with the establishment of the cause can we hope for a sound therapeusis of this condition.

ABSTRACT OF DISCUSSION

Dr. Carl R. Krone, Oakland, Calif.: I must agree to Dr. Wilbur's conclusion that leukemia is an infection, in particular the result of infection of the bone marrow. My findings, important by themselves in other respects, show that twenty-four hours after administration of chloroform in a case of tuberculosis of the lungs followed a period of hematopoietic activity expressed by a gradual increase of leukocytes and a likewise gradual decrease of erythrocytes. This activity was not due directly to the 20 c.c. of chloroform inhaled during one hour at each treatment, because the result, a maximum of 19,000 leukocytes and a minimum of 1,520,000 erythrocytes, was achieved only at the end of fifteen days, when the chloroform had long been eliminated. The chloroform, however, I claim, may have dissolved the lipoid matter surrounding the tubercles; also probably extracted at least in part the waxy substances of the capsules of individual bacilli, rendering the latter less viable or more vulnerable, and carried numbers of them away in the blood stream. The leukocytogenetic function was stimulated by this sudden invasion of less virulent bacilli and we witness a powerful influence on the entire hematopoietic system. This is the fact which connects my findings with Dr. Wilbur's conclusion that leukemia is an infection. In my case the blood picture, abnormal after fifteen days, approaches the normal in thirty days more. There are no myelocytes or other abnormal white cells, indicating by their absence that the hematopoietic system has not become injured by infection of the bone marrow. However, we may not exclude a possible infection and injury of that system and consequently a possible leukemia, especially if the *causa morbi* be not *Bacillus tuberculosis* but diplostreptococcus. Dr. Wilbur sees the case at the end of the story, when the *causa morbi* cannot any more be eliminated. I see the same case at its beginning, when the hematopoietic system is still intact and responds to normal stimulation of its defensive elements against an apparently less virulent invasion. I may add that clinically my tuberculous patient is doing well under the treatment with chloroform inhalation.

Dr. Max Einhorn, New York: The question whether leukemias are infectious is very important, and the mass of experience would tend to favor such a view. In acute leukemia we have more evidence as to the infectious character of the disease. I will only mention one case in my own experience, in which sickness began with disease of the throat, an acute condition that first appeared to be an acute tonsillitis. The patient was treated for a week or so and then came to the hospital and was under my observation. In a few days he developed more throat symptoms, swelling of the tongue and larynx, and soon we were able to make a diagnosis of acute leukemia. The lymphocytes were greatly increased. I think they amounted to 92 per cent. of the white blood corpuscles. He had a very high degree of leukemia, the white blood corpuscles being one to four or five of the reds. He died in four or five weeks, the symptoms being those of an acute type of irregular fever with swellings and hemorrhages. That is the way the acute leukemias do; the patients die in a month or two. Dr. Sunderman of New York has made observations in which the acute leukemia could apparently be traced to an infection. In my own case no blood cultures were made and no definite bacteriologic proofs were obtained, but clinically it was undoubtedly an infection. In one case a streptococcus was found. Possibly that was not the real cause of it, but there must be something that leads to the infection. At any rate, these cases are of great importance and I think we should all try to furnish material for study and not rely on necropsies in the study of the leukemias. We should be able to recognize the disease before necropsy.

Dr. J. A. Lichty, Pittsburgh: I think we all agree that it would be very fortunate if we could find the cause for the primary anemias in infection. Dr. Wilbur's paper carries us one step further in this direction when we find infections such as he has described. Yet there are many questions which come up, especially as to whether the micro-organisms which he found in his case were after all the etiologic factor. In many of these primary anemias, and especially in pernicious anemia, we find an elevation of temperature toward the termination of the disease. We can hardly think of anything else but that there is an infection, probably a terminal infection. Probably the vitality of the organism is such that micro-organisms which are not harmful ordinarily for the normal body become virulent and pervade the various tissues. I regret very much that Dr. Rosenow is not here to discuss this paper, because he has done so much work along the line of the subinfections. In pernicious anemia particularly we see the terminal elevation of temperature. In a fatal case of pernicious anemia at the Mercy Hospital, Pittsburgh, colon bacilli were recovered from the bone marrow, which was very interesting but hardly conclusive. Such work as Dr. Wilbur's will have to be pursued until we prove or disprove the infectious nature of these diseases.

Dr. R. L. Wilbur, San Francisco: I have no idea of claiming that we have proved that the diplostreptococci are the cause of leukemia. But we have found the diplostreptococci, and we have much proof that leukemia is infectious. It is important to make studies of the bone marrow in these cases, particularly from living patients, which will probably advance our knowledge of this disease much more rapidly than in the past. Specimens for such study may be readily removed under general or local anesthesia. It is important to take care of foci of infection. As to the care of the tonsil in leukemia, that is a question. Are we to take out the tonsils in leukemia? There is the possibility of a lighting up of the process and the death of the patient. If the affection of the tonsils seems to be responsible for the leukemia, we should take them out.

Defects in Schoolchildren.—The *Bulletin of the Chicago School of Sanitary Instruction* says regarding medical school inspection work that it is a service rendered by the department of health for which the taxpayers pay, but unless the parents do their share by having defects attended to after their discovery by the inspectors the money expended is wasted. The department's figures regarding this matter are interesting. In 1914 there were 75,476 examinations made. 45,176 children were found defective and 35,425 were advised to seek treatment. In each of these instances the parents were informed by a note of the nature of the ailment and treatment was suggested, but only 9,244, or 40 per cent., acted on this advice. In detail the figures were as follows: Of 4,054 cases of adenoids, 737, or about 18 per cent., were treated; diseased tonsils, 5,754 cases, of which 223, or a little over 4 per cent., were treated; discharging ears, 1,254 cases, of which 118, or a little over 10 per cent., were treated; defective vision, 9,364 cases, of which corrections were secured in 1,826, or a little over 12 per cent.; diseased eyes, 7,449 cases, of which 138 were treated, or a little less than 2 per cent.

to 103 in twenty-seven cases. After operation, the temperature either remained normal from the day of operation or returned to normal in seventeen cases; ten were normal the first day after operation, making twenty-seven cases; five returned to normal on the second day after operation, making thirty-two; three returned to normal on the third day, making thirty-five; one returned to normal on the fourth day, making thirty-six; two, fifth day following operation, making thirty-eight, while only two persisted with elevated temperature for seven days. Twenty-three had a leukocytosis before operation of over 9,000, some as high as 30,000, showing another evidence of probable infection. As to the cause, twenty-four stated that abortion came on spontaneously, and sixteen acknowledged that they had brought it on criminally. Of late it has been our practice to test the mothers for syphilis in case of an unexplained abortion. In four recent cases, all gave a negative Wassermann on examination. I present these statistics, hurriedly gathered together, to show that patients can be well treated by clearing out the uterus promptly, although at the same time I am sure Dr. Montgomery can in general practice show that many patients can empty the uterus spontaneously and are better untampered with. I wish to point out, however, that at present I cannot see the reason for not emptying the uterus in abortion.

Dr. John Osborn Polak, Brooklyn: Before this section and before the American Gynecological Society we have called attention for several years to the treatment of infected cases by the so-called palliative methods (so-called judicious neglect plan) versus operative procedure, and our results have been so exceptionally good that we have rather felt that the profession should share with us in the little knowledge that we have gained by the study of this procedure.

We divide abortions into the infected and the noninfected cases. I do not believe that any of us feel that in a noninfected case the uterus cannot be entered with safety and if the evacuation is complete and clear, perhaps the convalescence of that patient will be expedited; but I do know that the infected case which has protected itself, as each infected case does protect itself, by a leukocytic wall, and if a placenta is present and thrombi are formed in the vessels in the placenta site, that the infection is spread and the patient's condition is jeopardized by the routine procedure of curettage.

The question of interference in abortion is this: Is there hemorrhage or is there not hemorrhage? If there is no hemorrhage, our experience has been, even when the temperature is 104 or 105, that those patients, if placed in the Fowler position, an ice pack put over the abdomen and elimination maintained with saline solution and intestinal rest, with no cathartics and no food, show—inside of twenty-four to seventy-two hours—great improvement; the products will separate, for they have been starved off by the formation of the round-cell deposits, and the product of conception will be delivered completely, if left alone, in the large majority of cases. If it is not delivered spontaneously, it is found with the uterus contracted and this large mass lying in the dilated lower segment of the uterus. We have, for instance, reported twenty consecutive infected cases before the International Congress, with the complete contents of conception left *in situ*; every one of those patients made a complete recovery, the uterus expelling its contents spontaneously, and we believe just in proportion as these cases are interfered with, so is the morbidity increased. In a hundred consecutive cases, sixty-three had been curetted one or more times, and all of these showed exudates. On the other hand, in 200 consecutive cases admittedly infected, without interference, we found that in this series of cases our morbidity as to exudates and as to mortality was decreased. It is a pleasure to hear Dr. Montgomery, whose word covers such weight, protest against this active interference in abortion.

Dr. C. Lester Hall, Kansas City, Mo.: We all feel keenly the outrage that has been committed by the profession on the pregnant woman in the way of producing abortion. It is now many years since I first heard a man, or several men of high standing, in the discussion of this subject, flatly acknowledge a willingness to produce abortion in the maiden who had been unfortunately caught. My protest on that occasion, whether it had any lasting effects or not, was so emphatic that it has been my good fortune not to hear these men repeat this statement. The outrage is so monstrous that we cannot accentuate it too strongly. I feel that it is not done now as it once was done. I believe the profession is rising above this nefarious practice. In regard to the treatment of abortions, I think it depends very much on circumstances. I believe it would be justifiable in almost any case, if the obstetrician were sufficiently clean, to empty the uterus with a blunt instrument; to swab out the uterus once, and never again. It is the continual meddling that brings dire results, and even with all our care it is liable to produce septic conditions.

I know the value of the protective wall that nature has thrown out, and over and over again it has been my fortune, and I believe with good results, to stay the hand of the energetic, aspiring young obstetrician who wanted continually to meddle with these cases. We know the deleterious effect of uterine douching. In regard to giving these patients potassium iodid, that Dr. Montgomery refers to, to make a woman carry a baby to term, I would object to the giving of the potash. I think we might give iodin itself with safety, but in all these cases we are apt to have more or less kidney trouble, and I believe in giving potassium iodid we load up the system with this potash which is toxic and detrimental. I protest that in women with albuminuric conditions we should avoid the use of potassium iodid or other potash salts.

In regard to retrodisplacements of the uterus of the pregnant woman, it is a great misfortune if we cannot institute some measure whereby we can make this woman carry her child to term and prevent the recurrence of the retrodisplacements. This is the *only* nonsurgical way we can correct these displacements. This I have often done, and by the postural treatment after delivery recurrence of the retrodisplacement has been prevented. This will happen in 99 per cent. of all cases in which the retrodisplacement has existed before pregnancy.

The subject is so important, and coming from Dr. Montgomery, is so effective that I am sure if any young man here has been imprudent in the use of instruments after abortions, the doctor's paper will have a lasting good effect, and it will do us *all* a great deal of good.

Dr. S. M. D. Clark, New Orleans: It seems that we are about to agree on some standard method in handling abortions. In noninfected cases I believe with Dr. Montgomery the sanest plan is to empty the uterus with as little traumatism as possible and then leave an iodin wick for twenty four hours. The infected abortions are the ones on which there are still divergent opinions. It took a goodly experience before I could break away from the old plan of emptying the uterus in these cases. After all, the pathology should guide us, and when this is thoroughly understood, the locally inactive plan is the method that best complies with these laws. When called in consultation, how often have each of us found the physician giving daily intrauterine douches; he generally curets and if the temperature materially rises, feeling that there is still something remaining, he again curets. The pressure of the anxious family forces him into some local activity; he feels that he must be doing something, so he goes ahead douching and curetting. This daily mauling is repeated, not so much for the patient, but for the family. Where the infection is already beyond the endometrium, nothing could be more unreasonable than to expect relief by superficially fussing around in the interior of the uterus. Let such cases alone, adopt the locally inactive plan, furnish an abundance of fluids and keep the patients well nourished. The infection in practically every case will localize; an immunity will be established; the patient will autogenously vaccinate herself and the exudate either resolve or suppurate.

The importance of the lower segment of the uterus in these infected abortion cases has not been given due consideration. In many of our cases the upper segment is never involved, but rather the infection has struck directly out toward the parametrium through the richly supplied lymphatic circulation of the cervix. This is the type in which the true pelvic connective tissue abscess is found, which when drained is immediately cured. Could anything be more unreasonable than to curet in such cases? I think a point to be driven home is the extreme importance of exercising the most rigid asepsis when making vaginal examinations in diagnosing cases of abortion. The vaginal canal should be explored with the same aseptic regard as one would invade a knee joint or the abdominal cavity.

DR. H. G. WETHERILL, Denver: In the treatment of these cases it is important to determine whether one is dealing with a spontaneous abortion or a mechanically induced abortion. Infections of the genital tract are commonly retrograde infections if the abortion is mechanically induced, or if there has been gynecologic tinkering. If, on the other hand, it is an incomplete abortion, not of the mechanical type, then we certainly are justified in picking out with the placental forceps any retained portion of the product of conception which might otherwise give rise to sapremia. With this exception, I agree wholly with the principles of treatment set forth by Dr. Montgomery and I am heartily in accord with him in his strictures on the abuse of the uterine curet in such cases. So careful should we be in handling infected cases that a tenaculum or volsellum forceps should not be used to draw down and fix the cervix, as the small punctures made by the teeth of the instrument are sufficient to reinoculate a patient from the vaginal and cervical secretion.

For many years I have treated infections following abortions with alcohol after the method of Caruso. A double drainage tube of large caliber is inverted on itself, so that the solution cannot follow the tube. This tube is introduced to the fundus with strict antiseptic precautions and the alcohol which is used through it flushes the genital tract from the fundus outward with a nonpoisonous, antiseptic solution. Occasionally a solution of permanganate of potash or a diluted solution of iodin is substituted for the alcohol. In the treatment of such cases it is very easy to do too much and almost impossible to do too little. The majority of the patients will recover if let alone.

DR. E. E. MONTGOMERY, Philadelphia: I must confess that if called to a woman who had an abortion or was aborting, in whom a portion of the embryo had escaped, whom I had reason to feel was not an infected case, and in making a careful aseptic examination discovered a portion of the placenta projecting, I should be tempted at once to evacuate the uterus; but in cases such as one of the gentlemen mentioned in which the mass is situated within the body of the organ, the cervix, possibly, more or less contracted, the result of leaving the case to nature, treating it carefully, aseptically, will be attended with much less danger to the patient than would be the mechanical dilatation of the uterus and the removal of the structures within. I believe, also, in those cases of which Dr. Wetherill has spoken, in which a portion of the placenta remains and it is evident that sapremia exists, it is better to leave the condition undisturbed and trust nature to evacuate it rather than use mechanical measures.

Railway Accidents.—According to *Accident Bulletin 55* of the Interstate Commerce Commission, for the first quarter of 1915 the number of persons killed in train accidents on steam railways was 65, and the number of persons injured was 1,972. The total number of persons killed in all classes of accidents incident to railways was 1,650, and the number injured was 35,429. This includes 68 persons killed and 21,582 injured in so-called "industrial accidents," which are defined as accidents not connected with train operation, but occurring to railway employees, other than trainmen, on railway premises.

PLACENTAL BACTEREMIA*

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When the fetus is stillborn or the infant dies within a few days after its birth, frequently we are unable to determine the cause of death. This fact has been emphasized in the statistical analyses recently published from two American institutions. At the Sloane Hospital for Women[1] among 10,000 consecutive confinements there were 429 stillbirths and 291 infants which died within two weeks after they were born. Reviewing an equal number of confinements at the Johns Hopkins Hospital, J. Whitridge Williams[2] found 705 cases of stillbirth and early infant death. The fetal mortality in these clinics, it would seem, is practically identical. And in both series of statistics it is instructive to find that, although careful clinical observations and postmortem examinations were made, the cause of death was not ascertained in roundly 20 per cent. of the fatal cases.

Some time ago my attention was called to a cause of fetal death not widely appreciated and one which is left out of account in the reports just quoted. Whenever membranes rupture prematurely and the labor is prolonged, especially if repeated vaginal examinations are made, bacterial invasion of the placenta—placental bacteremia—may occur. This complication constitutes a serious danger for the fetus. Its relative importance as a factor in infant mortality is difficult to estimate but its practical significance is certain.

With reference to this question I have studied five hundred consecutive confinements under my care while connected with the University of California Hospital. Including infants over 40 cm. long the mortality was 5.4 per cent. (27 cases). The infant was stillborn in 21 cases; it died on the second day in 3, on the fourth in 2, and on the ninth in 1 case. A necropsy was performed in every instance. The causes of death were as follows:

	Cases	Per Cent.
Syphilis	7	26
Birth injury	6	22
Premature separation of placenta	4	15
Placental bacteremia	3	11
Congenital heart lesion	2	7
Enlarged thymus	1	3
Toxemia pregnancy	1	3
Undetermined	3	11

A number of well-known factors combine to explain why the fetal mortality is higher in case labor is prolonged. With 62 of my patients labor lasted longer than twenty-four hours and in this group 8 fetal deaths occurred (13 per cent.). Three of the deaths were due to placental bacteremia. The mothers of these infants were not seriously ill and at the end of two weeks were discharged from the hospital in good health. Such results, it will be made clear, are not always to be expected. But before considering the experience of other observers I may summarize the histories of my cases, giving only the facts pertinent to the problem under discussion.

CASE 1.—Primipara; aged 20; generally contracted rachitic pelvis with diagonal conjugate measuring 11 cm. Presentation right occipitoposterior. Duration of labor twenty-eight hours: membranes ruptured six hours before delivery by midforceps. Several vaginal examinations were made but the number was not recorded. Temperature during labor, 37.8 C. (100 F.); pulse, 70. Highest puerperal temperature, 37 C. (98.6 F.); pulse, 98.

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* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the Newborn, THE JOURNAL A. M. A., Jan. 23, 1915, p. 287.

[2] Williams, J. Whitridge: Limitations and Possibilities of Prenatal Care, THE JOURNAL A. M. A., Jan. 9, 1915, p. 95.

The child, 48 cm. long, weighed 3,080 gm. It was easily resuscitated. Death occurred on the third day. At necropsy the umbilical stump was dry and clean. The abdomen contained 250 c.c. of seropurulent fluid which showed streptococci in cover slips. There were subpleural ecchymoses over the left lung, but no intracranial hemorrhage and no meningitis. The brain was normal.

Sections of the placenta and umbilical cord stained with hematoxylin and eosin were normal. Sections of the placenta stained by the Gram-Weigert method showed a few streptococci just beneath the amnion in the neighborhood of the fetal blood vessels. Bacteria were not demonstrated in the cord.

Case 2.—Primipara; aged 23; normal pelvis. Presentation left occipito-anterior. Labor began with rupture of the membranes and after forty-five hours terminated normally. Six vaginal examinations were made. Temperature during labor, 38 C.; pulse, 108. Highest puerperal temperature was 38.2 C.; pulse, 110.

The child, 52 cm. long, weighed 3,540 gm. Resuscitation was difficult. Death occurred at the end of forty-eight hours. Shortly after its birth the infant bled from the mouth, and later patches of purpura appeared over the head, buttocks, scrotum and right knee. At necropsy a small blood clot was found on the parietal peritoneum adjacent to the umbilical vessels and another beneath the liver. The peritoneal cavity contained about 10 c.c. of uncoagulated blood but none was found in the intestines. There was no blood in the pleural cavity. Several hemorrhages the size of a pinhead were found at the base of each lung.

Sections of the placenta stained with hematoxylin and eosin were normal but the umbilical cord was infiltrated with leukocytes, most pronouncedly in the neighborhood of the vein. Stained by the Gram-Weigert method streptococci were demonstrated in the amniotic and chorionic connective tissue near the fetal surface of the placenta. Streptococci were also present in the cord.

Case 3.—Primipara; aged 38; normal pelvis. Presentation left occipito-anterior. Membranes ruptured when the cervix was dilated 5 cm., twenty-four hours before delivery was effected by midforceps. Temperature during labor, 37.8 C.; pulse, 106. Highest puerperal temperature, 38.5 C. (101.3 F.); pulse, 115.

The child, 50 cm. long, weighed 2,980 gm. For an hour before delivery the fetal heart sounds were not heard. The necropsy findings were negative except for a small cerebral hemorrhage beneath the left occipital lobe.

Sections of the placenta showed partial thrombosis of many of the vessels which pass over the fetal surface of the placenta. Large numbers of bacteria were demonstrated in the amnion covering the placenta and in the underlying chorionic connective tissue. Streptococci and also a short, stout bacillus, resembling the gas bacillus, were present. A few streptococci were found in the intervillous spaces but the chorionic villi were normal. A typical mixed thrombus almost completely blocked the umbilical vein. It contained streptococci as did also the wall of the vein and the surrounding Whartonian jelly. The walls of the umbilical arteries were slightly infiltrated with leukocytes but no bacteria were demonstrated there.

In all these cases organisms were demonstrated in the subamniotic connective tissue where they came in contact with the large fetal blood vessels which cross the surface of the placenta. In one instance it was possible to demonstrate bacteria in the act of penetrating the walls of these vessels. It is also noteworthy that in every case the epithelium which covers the villi was intact, the capillaries within the villi were of normal appearance, and no bacteria were found either on the surface or in the interior of the villi. Evidently the infection did not proceed from the maternal circulation and did not pass through the walls of the villi. The bacteria entered the placenta by way of the amniotic membrane. Most frequently, as in these cases, placental bacteremia depends on the infection of the amniotic fluid; and generally the latter complication occurs because the membranes rupture prematurely, labor is prolonged, and repeated vaginal examinations are made.

From a knowledge of the anatomy of pregnancy it is obvious that, at least theoretically, the infection of the amniotic fluid is possible by three routes; (1) organisms may pass from the maternal circulation across the decidua, the chorion, and the amnion; (2) they may travel from the peritoneal cavity down the fallopian tubes, or (3) they may ascend from the vagina through the cervical canal. In a series of animal experiments the progress of an infection along each of these paths has been demonstrated by Hellendall,[3] but only the third has a broad, practical significance in human pathology. It has not been established that the other routes ever play a rôle except under conditions that have been imposed experimentally. And yet, it is possible in human beings that hematogenous infection of the amniotic fluid may be the result of a maternal septicemia; and also that in case of acute inflammation of the appendix during pregnancy the responsible organisms may find their way down one of the fallopian tubes. At all events, in the cases I have observed, neither septicemia, appendicitis, nor peritonitis existed; on the other hand, ideal conditions prevailed for infection of the amniotic fluid by the vaginal route.

When the membranes have ruptured, an increased liability to infection is apparent; and some have taught that bacterial invasion of the amniotic cavity occurred while the membranes were intact. The evidence favoring the latter possibility, however, is not conclusive, as it has never been confirmed by bacteriologic examination. In the cases recorded by Lehmann, Carpentier, Brieglet, Lendanthal[4] and others, the foul smelling decomposed amniotic fluid which escaped when the membranes ruptured may have been due, as these observers suggest, to bacterial putrefaction; but in the absence of cultures it remains to be proved that the unruptured membranes are not an effectual barrier against the passage of bacteria from the vagina to the amniotic cavity.

Although under suitable conditions a great variety of pathologic bacteria may invade the amniotic fluid, the streptococcus has been the predominating organism found in cases of placental bacteremia. Frequently colon bacilli are associated with streptococci. In the case of tympanitis uteri during labor the colon bacillus was regarded as the exclusive etiologic factor until, in one instance, Krönig[5] demonstrated an obligatory anaerobic bacillus. Warnekros[6] has isolated the gas bacillus from blood cultures in several cases of placental bacteremia. And in one of my cases placental sections showed a short, stout bacillus corresponding morphologically with the *Bacillus aerogenes capsulatus* though its identity was not established by means of cultures.

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[3] Hellendall: Beitr. z. Geburtsh. u. Gynäk., 1906, x, 320.

[4] Lehmann, Carpentier, Brieglet, Lendanthal, quoted by Hellendall, Note 3.

[5] Krönig: Centralbl. f. Gynäk., 1894, xviii, 749; ibid., 1905, xxix, 1243.

[6] Warnekros: Arch. f. Gynäk., 1913, c, 173.

From the nature of the lesion in placental bacteremia, an infection within the uterus, generally limited to the amnion and the chorion and often most pronounced in the neighborhood of the large vessels passing over the fetal surface of the placenta, the associated clinical problem pertains both to the mother and to the child. Thus far, its maternal aspects have aroused the greatest interest. And this interest has been stimulated chiefly by a desire to determine whether a true uterine infection was responsible for intrapartum fever.

Glockner[7] thought the existence of an infection was unnecessary to explain intrapartum fever. Frequently in these cases the temperature becomes normal immediately after delivery, or presents only a slight temporary rise during the puerperium. Consequently, Glockner assumed pathogenic bacteria were not present, and ascribed the intrapartum symptoms to prolonged and violent uterine contractions. Winter[8] favored this view but also admitted that bacteria might be indirectly concerned. According to Winter's hypothesis the symptoms were occasionally explained by the absorption of toxins from a decomposing ovum. On the other hand, Hausen, Krönig, and Hellendall declared that intrapartum fever, like puerperal fever, depended on a bacterial invasion of the maternal tissues.

It occurred to Warnekros that this difference of opinion could be settled if cultures were made from the mother's blood in case her temperature during labor rose above 38.5 C. The procedure was adopted in 25 cases; the cultures from 18 cases were positive, from 7, negative. In 9 instances streptococci were isolated, in 3 staphylococci, and in the other positive cases colon bacilli, pseudodiphtheria bacilli, or anaerobic gas-producing bacilli; not infrequently more than one type of organism was isolated. Whenever a positive culture was obtained during labor, another was made on the day following delivery. The puerperal cultures were negative except in one instance—the case of a patient who died of a streptococcus septicemia on the third day postpartum.

In approximately 70 per cent. of the cases of intrapartum fever it was clear that a genuine, if temporary, infection of the mother existed. The cause of the fever in the other cases was uncertain. Consequently, the scope of the investigation was broadened, and sections of the placenta were stained for bacteria. In every instance, even though the blood cultures had been negative, organisms were found in the placenta. And, therefore, Warnekros concluded that intrapartum fever, unless attributable to some accidental cause, as tuberculosis, was due to an infection of the mother, often mild and temporary, and that a placental bacteremia was always demonstrable.

The character of the puerperium which will follow a febrile labor may best be predicted from the result of blood cultures taken the day after delivery. Generally, these are negative and a good prognosis is assured. On the other hand, positive cultures indicate the existence of a puerperal infection. Blood cultures at the time of labor have no prognostic value. Similarly, as a prognostic sign the degree of fever at the time of labor is unreliable, for Winckel[5] observed several patients who experienced a puerperal convalescence free from fever in spite of an intrapartum temperature above 39 C. (102.2 F.).

The puerperal morbidity in cases of intrapartum fever, an average based on the report of 944 cases by five observers, would seem to be about 63 per cent., the puerperal mortality 6.2 per cent.

RESULTS FOR THE MOTHER FOLLOWING INTRAPARTUM FEVER

	No. of Cases	Normal Puerperium Per Cent.	Slight Fever Per Cent.	Severe Fever Per Cent.	No. of Deaths
Ahlfeld[1]	62	35.5	29.8	35.5	3
Glockner[2] ...	211	62.5	15.16	22.27	13
Ihm[3]	190	58.43	25.27	13.69	8
Kronig[4]	37	21.6	.....	78.4	7
Hellendall[5] ..	44	6.54	63.63	29.54	1

1. Ztschr. f. Geburtsh. u. Gynäk., 1893, xxvii, 494.
2. Ztschr. f. Geburtsh. u. Gynäk., 1891, xxi, 409.
3. Ztschr. f. Geburtsh. u. Gynäk., 1904, lii, p. 30.
4. Centralbl. f. Gynäk., 1894, xviii, 749; ibid., 1905, xxix, 1243.
5. Beitr. z. Geburtsh. u. Gynäk., 1906, x, 320.

In case of intrapartum fever the outlook is much more serious for the infant than for the mother. The fetal mortality encountered by Ihm was 18 per cent., by Hellendall 19 per cent., by Winter 35 per cent., and by Kronig 61 per cent. These statistics include cases of toxemia of pregnancy, of placenta praevia, of pelvic contraction, and of malposition of the fetus. Therefore, the death of the fetus may have been due to one of several causes, and, lacking the requisite examination, it is impossible to determine to what extent the infection of the placenta was concerned.

At present I am content to emphasize the fact that intrapartum infection must be regarded as one cause of fetal death, and also to demonstrate that the umbilical vessels may be the path of the infection. Heretofore, it has been assumed that antepartum infection of the fetus depended on its swallowing or aspirating the infected amniotic fluid. At most, Krönig has said, blood-borne infections to the fetus are limited to cases in which the mother is suffering from septicemia, as in typhoid fever, pneumonia, tuberculosis or cholera. But another possibility must be reckoned with, namely this: If the amniotic fluid is infected, the bacteria may cross the amnion and invade the placental vessels which carry blood to the fetus.

In one instance I have noted an intense infection of the subamniotic connective tissue and have demonstrated streptococci in the vessels on the fetal surface of the placenta and also in the umbilical vein. In another, streptococci were found in the placenta and in the cord, not in the lumen of the vein but in its wall. As further evidence that the cord infection proceeded from the placenta rather than the fetus no inflammatory lesion of the fetal respiratory or gastro-intestinal tract was found in any case. Various fetal organs were stained for bacteria but none were demonstrated.

It is also instructive that an examination of the placenta for bacteria occasionally serves to establish the cause of fetal death. Until this examination was made, the death of one infant which presented at necropsy a general peritonitis was attributed to imperfect nursery hygiene. Obviously, that explanation was excluded by the demonstration of streptococci in the placenta. Again, in the second case of placental bacteremia, the clinical diagnosis was hemophilia, and human blood serum was administered; the

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7. Glockner: Ztschr. f. Geburtsh. u. Gynäk., 1891, xxi, 386.
8. Winter: Quoted by Meyer-Ruegg in Handb. d. Geburtshülfe, ii, Part 3, p. 2375.
9. Winckel: Quoted by Kronig, Note 5.

necropsy added nothing to the clinical findings. Also, in the third case the cause of the death of the fetus was not established clinically nor by postmortem; without appropriate study of the placenta the diagnosis could not have been made.

Placental bacteremia is not always attended by the death of the fetus or the newly born infant. This would not be expected. Bacterial invasion of the amnion and the chorion does not mean that the fetal blood vessels will necessarily become involved. The invasion may advance in another direction. Furthermore, the period of time elapsing between the invasion of the amnion and the birth of the infant may be too short for the organisms to reach the blood vessels in question. Clinical evidence corroborates this view; in cases of intrapartum fever, at most, two thirds of the infants perish.

This series of cases is not large enough to justify an uncompromising estimate of the part placental bacteremia plays in infant mortality. The fact, however, that three of twenty-seven deaths were attributable to this cause shows that it must be taken seriously into account. Perhaps it explains an appreciable number of the fetal and infant deaths heretofore impossible of explanation. Therefore, it is pertinent to recall the frequency of certain phenomena which are usually associated with bacterial invasion of the fetus.

Premature rupture of the membranes was noted by Bassett[10] five hundred times in 4,141 consecutive confinements and by Dmelin[11] four hundred times in 4,000 confinements. Thus, the frequency of this accident may be estimated to be between 10 and 15 per cent. On the other hand, Winckel and Krönig regard 3 per cent. as a fair estimate for the frequency of intrapartum fever. Basing a calculation on these statistics, it appears, if the membranes rupture prematurely, bacterial invasion of the placenta occurs in every fourth or fifth case. In view of these facts the routine study of the placenta for the purpose of demonstrating bacteria should be undertaken not only when the labor is febrile but also if it is prolonged after the membranes rupture.

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[10] Bassett: Ztschr. f. Geburtsh. u. Gynäk., lxxiii, 566.

[11] Dmelin: Quoted by Bassett, Note 10.

Swimming-Pool Sanitation.—A valuable contribution to this subject is contained in *Public Health Reports*, Sept. 17, 1915. It is by W. A. Manheimer, Ph.D., of the Department of Bacteriology of Columbia University, and details in tabulated form the results of a bacteriologic study of the water of a number of pools under various conditions of use, without and with the use of a number of chemical disinfectants. Among the conclusions reached were that the cubic capacity of a pool affects its sanitary condition, pools of small capacity being more difficult to keep in a satisfactory condition even with the use of chemicals; the process of adding dilution water is an efficient means of reducing the bacterial content; the supervision of the plant and the class of attendance are also important factors in pool sanitation; filtration is an adequate means of clarifying the water, which is a means of preventing accidental drowning. In pools in which refiltration is not practiced the water becomes so cloudy in one day that the bottom of the pool cannot be seen; chemical disinfection with calcium hypochlorite is effective, but if added too infrequently or in too small quantity its value is largely lost. A trace of chlorin should be constantly present; the best method of keeping a pool in safe and sanitary condition is by the combined method of refiltration and chlorination.

A MODIFICATION OF THE ABDERHALDEN TEST *

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PITTSBURGH

In the course of the last two years the Abderhalden reaction has been brought to the attention of the medical profession so often that it is safe to assume that the fundamental facts discovered by Abderhalden are generally known. In short, Abderhalden, as does Ehrlich, assumes that normal cells of the body are able to assimilate only those substances present in the blood as its normal constituents. The changes brought about in the composition of the blood serum by introduction of foreign substances lead to disturbances in the processes of cellular nutrition and often to cellular death. The experimental study of the phenomena of assimilation of foreign material introduced directly into the blood stream revealed a number of facts pointing to the tendency of the cells to elaborate a special mechanism, by means of which the cells are able to protect themselves in a specific manner against the injurious effects of disturbances of their normal nutrition.

According to Abderhalden, this protective mechanism consists in the formation in the cells of new and specific ferments, which directly attack the foreign material. As in the case of the antibodies of Ehrlich, these specific ferments, according to Abderhalden's conception, at a certain stage of the process, may appear detached from the cells, and be found circulating free in the blood. The presence, in the blood of animals, of such specific ferments not existing there normally, may be taken to indicate that the parenteral digestion of foreign substances is taking place in the body. According to Abderhalden and his collaborators, the presence of such specific ferments may sometimes be demonstrated in the blood of experimental animals a few hours after the parenteral introduction of foreign substances.[1]

As Abderhalden has shown, not only foreign substances introduced experimentally, or these penetrating in the tissues as a result of infection, but also autogenous substances arising in the animal body under physiologic conditions may cause the production of specific ferments as soon as such substances find their way into the blood stream. Thus for instance, he found that during pregnancy the animal body elaborates specific ferments capable of digesting placenta protein.[2] This finding led Abderhalden to propose a new method of diagnosis of pregnancy, whereby the condition of pregnancy is suspected in every case in which the blood of the individual contains specific ferments that are capable of digesting placenta tissue in vitro.[3]

A great number of investigators confirmed Abderhalden's findings, and some of them attempted to apply the method to the diagnosis of various pathologic conditions.[4] They also found these ferments specific to such a degree, that they were able to differentiate by this method different closely allied species of bacteria.[5]

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* From the Research Laboratories of the Western Pennsylvania Hospital.

[1] Abderhalden, E.: Abwehrfermente, Ed. 4, 1914, pp. 77, 78. Heilner and Petri: München. med. Wchnschr., July 15, 1913, p. 1530.

[2] Abderhalden, E.: Abwehrfermente, p. 91.

[3] Abderhalden, E.: Abwehrfermente, pp. 92, 93.

However, in spite of the great number of most enthusiastic supporters of the specificity of this method,[6] many investigators, continuously increasing in number, have not been able to fully confirm the usefulness of the method. According to some of them the reaction is absolutely devoid of specificity,[7] and others, whereas they acknowledge its value in negative cases as definitely excluding the presence of specific ferments, deny the value of positive findings;[8] others, again, think that the ferments are only relatively specific, namely, their specificity is directed toward groups of substances, but not toward the individual members of each group.[9]

Referring to these differences in opinion of different investigators, Abderhalden repeatedly stated that those unable to repeat his experiments are undoubtedly using a faulty technic, and until they obtain the expected results, they ought not to consider themselves in possession of the knowledge of the method.[10] On the other hand, Oeller and Stephan, for instance, from their experience with the test, concluded that the reasons for the discrepancies are much deeper—they believe that the study of protective ferments has already come to the point at which "further progress is possible only if the whole mass of contradictory clinical results obtained up to date is thrown overboard, and the study of the problem is started anew."[11] These authors found that although under certain conditions of the experiment the Abderhalden method gives suggestive results, still the further systematic study is impossible until we do away with such parts of the technic of the method as are responsible for the errors in the result.

Although many authors are inclined to think that the technic of the Abderhalden test is very difficult,[12] our own experience showed us that the method is much simpler than some other serologic methods. The difficulty in obtaining more constant results, lies, as we see it, not so much in the complexity of manipulations, as in the fact that the relations of the ingredients to each other are not properly understood, and, therefore, are not properly controlled in the test.

Our experiments have shown us that although in a number of cases one obtains apparently specific results, the Abderhalden reaction does not depend on the presence in the serum of specific ferments.[13] The very fact that these ferments, according to Abderhalden, appear almost immediately on introduction of foreign material, made many authors doubt the possibility of their existence.[14] Moreover, the fact that a certain number of male serums in the hands of reliable workers give rise to dialyzable split products when combined with placenta shows that the digestive properties of serum may not be specific.

In our own experiments conducted with the view of detecting the nature of the Abderhalden reaction, we came to the conclusion that in no case is the placenta digested,[15] and that the mechanism of the reaction is entirely different from that ascribed to it by Abderhalden. Namely, we found that, as first suggested by Stephan and Hauptmann,[16] the Abderhalden test is possible only with the serums containing complement, and when complement is missing, any fresh serum is able to activate the test,[17] thus showing that at least the active principle in the digestion is not specific. Moreover, it was found that the relative specificity of the test depends not on the presence of specific ferments, but on the substances, which, like the antibodies of Ehrlich, are not active by themselves, but are responsible for the specificity of the reaction.[18] We found, further, that the active principle responsible for the appearance of the dialyzable substances is, like complement, present in every fresh serum, and possesses properties of a tryptic ferment. This ferment is normally prevented from exhibiting its digestive power by the simultaneous presence in every serum of inhibiting substances apparently colloidal in nature. These under the influence of the physiochemical changes in the medium occurring during the experiments, easily lose their property to neutralize the trypsin of the serum.[19] Such changes are most easily produced through adsorption. For instance, addition to a fresh serum of a suitable amount of any organic substratum or of substances like kaolin, starch, agar, etc.,[20] changes the degree of colloidal dispersion in the serum, and the normal trypsin is set free. Although, as we have shown,[21] if such nonspecific tryptic ferment liberated from the serum is able to digest natural protein (bacteria, placenta cells, etc.), it is, however, absolutely unable to attack a denatured coagulated substratum. It is thus that we concluded that in the Abderhalden reaction the dialyzable split products originate not from the boiled substratum, but from the serum itself.[18, 19]

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[4] In close succession a number of publications described results obtained from application of this method to the study of neoplasms. (Freund, E.: Wien. klin. Wchnschr., 1913, xviii, 730; Fried, C.: München. med. Wchnschr., 1913, i, 2782; Gambaroff: ibid., July 29, 1913, p. 1644; Lowy, Otto: A Serum Reaction as an Aid in the Diagnosis of Cancer, The Journal A. M. A., Feb. 7, 1914, p. 437; Benech, J.: Compt. rend. Soc. de biol., 1914, lxxvi, 361), asthma (Kabanow: Russk. Vrach, 1914, No. 4, abstr., Deutsch. med. Wchnschr., 1914, p. 770), syphilis (Reines: Wien. med. Wchnschr., 1914, No. 10; Mahlo: Abstr., München. med. Wchnschr., July 28, 1914, p. 1695; Fraenkel: Ibid., p. 1695; Voelkel: Ibid., No. 7, p. 349; Bornstein: Arch. f. Dermat. u. Syph., 1914, cxx), rabies (Babes and Pitulesco: Compt. rend. Soc. de biol., 1914, lxxii, 207), tetanus (Urechia and Popeia: Ibid., 1913, lxxv, 591), pellagra (Babes and Jonnesco: Ibid., 1914, lxxxvii, 171), tuberculosis (Abderhalden and Andryewsky: München. med. Wchnschr., 1913, lx, 1641. Lampe: Deutsch. med. Wchnschr., 1913, No. 3, Melikjans: Ibid., 1914, No. 27. Gompertz: Beitr. z. klin. d. Tuberk., 1914, xxx, No. 1. Fraenkel and Gompertz: Deutsch. med. Wchnschr., 1913, p. 1585. Wolf and Frank: Berl. klin. Wchnschr., 1914, p. 875), nervous diseases (Ahrens: München. med. Wchnschr., 1913, p. 1857. Beyer: Ibid., 1913, p. 2450. Ahrens: Ztschr. f. exper. Med., 1914, p. 397. Binswanger: München. med. Wchnschr., 1913, lx, No. 42. Fauser: Ibid., 1913, p. 1984; ibid., 1914, p. 126), nephritis (Kotchanef and Chingarewa: Compt. rend. Soc. de biol., 1914, lxxvi, 354), scarlet fever (Schultz and Grote: München. med. Wchnschr., 1913, p. 2510).

[5] Kirchbaum and Köller: abstr., München. med. Wchnschr., June 23, 1914, p. 1415. Voelkel: Ibid., Feb. 17, 1914, p. 349.

[6] Heinemann: München. med. Wchnschr., 1913, p. 915. Daunay and Ecalle: Compt. rend. Soc. de biol., 1913, lxxiv, 1190. Sabin: Presse méd., 1913, p. 1015. Mayer: München. med. Wchnschr., 1914, lxi, 67. Schiff: Ibid., 1914, lxi, 768. Tsatchenko: Deutsch. med. Wchnschr., 1914, p. 1411. Schwartz, Henry: Value of Abderhalden's Biologic Reactions to the Obstetrician and Gynecologist, The Journal A. M. A., Aug. 1, 1914, p. 371; and many others.

[7] Heilner and Petri: München. med. Wchnschr., 1913, p. 1775. Krim: abstr., Deutsch. med. Wchnschr., 1914, p. 38. Michaelis and Lagermark: Berl. klin. Wchnschr., 1914, p. 364. Oeller and Stephan: München. med. Wchnschr., 1914, lxi, 12. Lichtenstein and Hage: Ibid., p. 915. Flatow: Ibid., p. 1168. Fraenkel: Deutsch. med. Wchnschr., 1914, p. 589; and many others.

[8] Echols, Chester M.: Limitation of the Dialysis Method as a Practical Test for Pregnancy, The Journal A. M. A., Aug. 1, 1914, p. 370.

[9] Pincussohn and Petow: Biochem. Ztschr., 1913, p. 319. Singer: München. med. Wchnschr., 1914, p. 350. Meyer, Betz and Rhymer: München. med. Wchnschr., 1914, p. 1211.

[10] Abderhalden, E.: München. med. Wchnschr., 1914, p. 233.

[11] Oeller and Stephan: Deutsch. med. Wchnschr., 1914, p. 1557 (Conclusions).

[12] Meyer, Betz and Rhymer: Note 9. Csepai: Wien. klin. Wchnschr., 1914, No. 23.

[13] Bronfenbrenner: Pennsylvania State Méd. Jour., October, 1914; Biochem. Bull., 1915, p. 87.

[14] De Waele: Ztschr. f. Immunitätsforsch., Orig., 1914, xxii, 170. Heilner and Petri, München. med. Wchnschr., 1913, p. 1530. Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 3.

[15] Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 7.

[16] Stephan: München med. Wchnschr., 1914, p. 801. Hauptmann: Ibid., p. 1167. Benech: Compt. rend. Soc. de biol., 1914, lxxvi, 361. Bronfenbrenner: Jour. Exper. Med., 1915, xxl, 221.

[17] Abderhalden and Grigorescue: Med Klin., 1914, No. 17.

[18] Bronfenbrenner: Proc. Soc. Exper. Biol. and Med., 1914, p. 4.

[19] Bronfenbrenner: Jour. Exper. Med., 1915, p. 221.

[20] This phenomenon was noticed also by previous observers (Plaut: München. med. Wchnschr., 1914, p. 238. Kjargaard: Ztschr. f. Immunitätsforsch., xxii, 31. Herzfeld: Biochem. Ztschr., 1914, p. 1. Peiper: Deutsch. med. Wchnschr., 1914, xl, 1467. Flatow: München. med. Wchnschr., 1914, lxi, 1168).

[21] Bronfenbrenner and Scott: Proc. Soc. Exper. Biol. and Med., 1915, p. 137.

Experiments show that the number of positive reactions, obtained with specific serums, is much higher than that obtained with normal, although the substratum in the Abderhalden reaction is not digested, and the dialyzable substances originate from autodigestion of the serum under examination. Many authors who ascribe the digestion in Abderhalden reaction to nonspecific ferments, have suggested that the apparent specificity of the test must be due to the fact that during pregnancy as well as in different pathologic conditions, the serum contains a larger quantity of proteolytic enzyme than normally, and thus gives a higher percentage of positive reactions.[22]

Our own experiments, however, suggest another explanation. Whereas an excess of substratum is able to set to autodigestion any fresh serum, in an absolutely nonspecific manner, a suitable amount of substratum as prescribed by Abderhalden will very often react only with specific serums. It is thus possible that the reaction is specific when certain definite quantitative relations are maintained between the substratum and the serum, it is certain, however, that an excess of substratum will exert a nonspecific adsorption on any fresh normal serum. The experiments performed with the view of studying this possibility showed that boiled substratum, similarly to any antigen, is able to extract from the specific serum its antibody, and as a result this substratum is so changed that it is now able to adsorb from the fresh serum its antitrypsin and thus set free trypsin (Table 1).

TABLE 1.—CHANGE IN SUBSTRATUM CAUSING IT TO SET TRYPSIN FREE ACCORDING TO TEST

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<tr><td colspan="4">On ice for sixteen hours</td><td colspan="3"></td></tr>
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<tr><td colspan="4">Transferred to 37 C. for sixteen hours</td><td colspan="3"></td></tr>
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<tr><td></td><td>0.5 gm. substratum with 1.5 c.c. normal serum placed in a thimble at 37 C. for sixteen hours</td><td colspan="2">0.5 gm. substratum with 1.5 c.c. normal serum placed in a glass tube on ice for sixteen hours</td><td>0.5 gm. fresh substratum with 1.5 c.c. normal serum placed in a thimble at 37 C. for sixteen hours</td><td colspan="2">0.5 gm. fresh substratum with 1.5 c.c. normal serum placed in a glass tube on ice for sixteen hours</td></tr>
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</table>

Substratum is allowed to remain in contact with specific serum in a centrifuge tube on ice for sixteen hours, as before. Then the contents of the tube are centrifuged and the substratum is separated *from the serum. The substratum is now* washed, suspended in salt *solution, and placed* in a dialyzing thimble, and the serum, separated from it, is placed in another thimble and returned to the ice box for sixteen hours. As the table shows, no dialyzable substances appeared in either case. If, however, both thimbles were now transferred to *37* C., the serum gives *off products* of self-digestion, while the substratum does not show even traces of it. However, according to the hypothesis suggested, such a substratum must have acquired the property of removing from the serum the substances inhibiting the activity of the ferment in the serum. *To ascertain* if this was the case, the same substratum was separated from salt solution and placed in contact with fresh normal serum in a new thimble (Table 1, *A*). Whereas the normal serum used in this experiment, when placed in contact with fresh substratum, gave a negative Abderhalden test (*Table* 1, *C*), the same serum, being placed in contact with the substratum previously treated with specific serum, and from which all traces of the serum were washed away, gave a distinct ninhydrin reaction (Table 1, *A*).

The experiments reported in Table 1 thus show that within certain quantitative limits the Abderhalden reaction remains specific, but if the substratum is taken in excess, it may act mechanically and the reaction becomes nonspecific.[23]

It is thus apparent that the Abderhalden reaction consists of two consecutive phases. *In the first phase* of the reaction the antigen of the substratum unites with the antibody of the specific serum, and in the second phase such a "sensitized substratum" adsorbs antitrypsin and permits autodigestion of the *serum*. By preventing fresh serum from autodigestion immediately following the sensitization of the substances we actually separated the two phases.[24].

Using the known property of antibody to unite with antigen at low temperature, which prevents the activity of the complement and also excludes the activity of the proteolytic ferment, we found that the thimble containing placenta and pregnant serum did not give up dialyzable substances into the surrounding medium.

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[22] Solowjew: Zentralbl. f. näk., 1914, No. 17. Kjargaard, Ztschr. f. Immunitätsforsch., 1914, xxii 1. Flatow: München. med. Wchnschr., 1914, p. 1500.

[23] It is important to remember that the suitable amount of substratum, acting specifically with one serum may be unsuitable for another serum, and here is the main weakness of the method.

[24] Bronfenbrenner, Mitchell and Schlesinger: Biochem. Bull., April, 1914, p. 386.

We did find, however, that the placenta, as well as the serum, underwent changes very similar to those we should have expected if we had used a hemolytic amboceptor and corresponding erythrocytes, namely, placenta protein had adsorbed the antibody from the serum and the serum lost all its specific properties. The summary in Table 2 gives the essentials of our results.

These findings are not only of theoretic importance, inasmuch as they furnish further proof of the similarity of the phenomenon described by Abderhalden to immunity reactions in general, but are also of practical value. Those making routine examinations by the Abderhalden method, know that the blood of a patient taken under certain conditions may contain an amount of amino-acids sufficient to mask the specific reactions,[25] as for instance, when the patient has high temperature, when there is pus formation, or if the patient has recently partaken of food. Whereas, the last mentioned factor can be regulated with but little inconvenience to the patient, the blood being taken before breakfast, it is impossible to obviate the complications in other cases.[26] In such instances where the serum itself contains dialyzable ninhydrin reactive substances, the difference in the intensity of the reaction with ninhydrin in the control tube, and in the tube containing substratum as well as serum, furnishes the basis for diagnosis, but undoubtedly this may be a source of errors.[27] A modification was offered therefore, by Schlimpert,[28] who removes this source of error by subjecting the serum of the patient to dialysis prior to application of the test proper, using subsequently such serum deprived of its dialyzable material for the digestion with placenta.

TABLE 2.—ESSENTIALS OF AUTHORS' RESULTS IN TESTS WITH PLACENTA

1.5 c.c. specific serum with 0.5 gm. boiled substratum	
In glass tube on ice sixteen hours	
Centrifuged	
Substratum (sensitized?) with 1.5 c.c. normal serum	Serum (exhausted?) with 0.5 gm. fresh substratum
In thimble at 37 C. for sixteen hours	In glass tube on ice for sixteen hours
Ninhydrin test +	Centrifuged
	Substratum (sensitized?) with 1.5 c.c. normal serum
	In thimble at 37 C. for sixteen hours
	Ninhydrin test —

Our own study suggests another possible modification of the procedure of Abderhalden which would take advantage of the property of the substratum to become sensitized by the specific serum, so as later to give up dialyzable substances when placed in contact with any fresh human or animal serum. Such a method would permit the examination of serum taken at any time, no matter what the condition of the patient might be. The procedure is the following: After remaining over night in contact with suspected serum in the ice box, placenta (or any other substratum as the case may be) is centrifuged, washed with water to remove any serum which may adhere to it, and placed in a new thimble with any fresh serum that happens to be on hand. The best for this purpose is serum from a guinea-pig kept without food long enough (from six to eight hours) to free its blood from dialyzable ninhydrin reactive substances. It is necessary of course to take the additional precaution in examining for pregnancy, of using male guinea-pig serum, since fresh serum from a female guinea-pig which may happen to be pregnant may give a positive reaction when combined with placenta in the test, and this may cause grave error.

CONCLUSIONS

Abderhalden tests depend on the presence in the serum of specific substances which are not of a fermentive nature.

The substratum is not digested during the test.

Dialyzable split products originate from the serum as a result of its autodigestion, and not from the substratum.

Analysis of the test shows that it consists of two phases, and this gives a basis for a useful modification of the method.

PANCREATIC FERMENT DETERMINATION IN PULMONARY TUBERCULOSIS *

ETHAN A. GRAY, M.D.
Medical Director, Chicago Fresh Air Hospital; Attending Physician, Augustana Hospital
AND
OLGA PICKMANN, M.D.
Assistant Chicago Fresh Air Hospital
CHICAGO

Much attention has been given to the diet of the tuberculous. Quality and daily quantity have received consideration. Digestive disturbances, as expressed by anorexia, vomiting, dyspepsia (gastric distress), intestinal indigestion and diarrhea have long been recognized as forming parts of the general picture in tuberculosis.

In the absence of gross signs of digestive derangement, it is not unusual to see a patient eat well but fail to gain in weight. It is common to see a tuberculous patient refuse all food, especially when the system is under the influence of toxins; this may be in the early febrile period as well as in the terminal stage.

Again, we see patients with good appetites and high temperatures — far advanced patients, with no appetites and low temperatures.

Observing over 200 cases, we found that, as is well known, our patients preferred vegetables and starches; that they consumed foods of these types much in excess of body needs and their ability to digest, and that starch was passed in the feces, chemically unchanged — not alone in recognizable particles as, for example, potato, but also in the fecal mass, to be ated from the serum is able to digest natural protein (bacteria, placenta cells, etc.), it is, however, absolutely unable to attack a denatured coagulated substratum. It is thus that we concluded that in the Abderhalden reaction the dialyzable split products originate not from the boiled substratum, but from the serum itself.[18, 19]

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[25] Abderhalden: München. med. Wchnschr., Feb. 24, 1914, p. 401; Abwehrfermente, p. 257. Lange: Berl. klin. Wchnschr., 1914, p. 785.

[26] The presence of dialyzable material in the fluid in which the specific ferments are looked for, is especially important in the examination of urine, in which there is always a certain amount of such substances present.

[27] Bisgaard and Korsbjerg: Deutsch. med. Wchnschr., 1914, p. 1367. Abderhalden: Abwehrfermente, p. 289.

[28] Schlimpert and Issel: München. med. Wchnschr., 1913, lx, 1758. Porchownik: Ztschr. f. Gynäk., 1913, p. 1226. Abderhalden: Abwehrfermente, p. 291. Abderhalden and Wildermuth: München. med. Wchnschr., 1914, p. 862.

* Read before the National Association for the Study and Prevention of Tuberculosis, Seattle, June 16, 1915.

Experiments show that the number of positive reactions, obtained with specific serums, is much higher than that obtained with normal, although the substratum in the Abderhalden reaction is not digested, and the dialyzable substances originate from autodigestion of the serum under examination. Many authors who ascribe the digestion in Abderhalden reaction to nonspecific ferments, have suggested that the of substratum will exert a nonspecific adsorption on any fresh normal serum. The experiments performed with the view of studying this possibility showed that boiled substratum, similarly to any antigen, is able to extract from the specific serum its antibody, and as a result this substratum is so changed that it is now able to adsorb from the fresh serum its antitrypsin and thus set free trypsin (Table 1).

The experiments reported in Table 1 thus show that within certain quantitative limits the Abderhalden reaction remains specific, but if the substratum is taken in excess, it may act mechanically and the reaction becomes nonspecific.[23]

It is thus apparent that the Abderhalden reaction consists of two consecutive phases. In the first phase

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</table>

...ation. This represents 5,000 units.
The average normal reading is from 500 to 1,000.
To make the test, fecal solutions of 1:10, 1:100
and 1:1,000 are made and poured into nine test tubes
as follows: First three tubes: 1:10 solution, 2, 1
and 0.5 c.c. starch solution 1 per cent., or casein
solution 1:1,000. Second three tubes: 1:100 solu-
tion, 2, 1 and 0.5 c.c. Third three tubes: 1:1,000
solution, 2, 1 and 0.5 c.c. To each tube are added 5 c.c.
of 1 per cent. soluble starch solution or 1:1,000 casein
solution, as the case may be. The tube showing diges-
tion, that is, no reaction, by the weakest fecal solu-
tion after twenty-four hours' incubation, is taken as
the index of digestion. The casein reagent is, as pre-
viously indicated, acetic alcohol (1 per cent. acetic acid
may be used); the starch reagent is Lugol's solution.
A large number of the cases examined showed no
free amylopsin. This does not mean that no amylopsin
had been secreted, but that all secreted amylopsin had
exp... neutralized by the starch excess (Cases 4, 6, 7, 8
to se...). We should, therefore, disregard zero amyl-
lutely ...readings until we estimate the starch intake.
stratum ... which showed amylopsin from 25 to 50
react only with spe... take of food, and hence the reading
the reaction is spec... (Cases 2 and 8). More work
...relations are ma... amylopsin in this connection.
tative ... it is ce... much higher and seem to pos-
and the ser... is by ... ...ortance. Relatively few tryp-
...Gynäk... ...en but, where present, often

PROTOCOL

The protocols show trypsin and amy... reduced in the tuberculous under influence of toxins. In favorable cases, disappearance of toxin is accompanied by increase of trypsin. Amylopsin is less frequently found because of the excess of starch found in the feces of the tuberculous; the ferment is neutralized by this excess. Trypsin indexes may be large in presence of anorexia and gastro-intestinal complications by lack of protein neutralization; also, because of actual improvement. Constantly low trypsin index is present in failing cases. Rising index with good appetite is favorable.

Case 1.—Frida S. Far advanced.

Oct. 30, 1914, amylopsin, 10,000; no trypsin demonstrable. Absolute anorexia. Death. No food intake, and hence no neutralization of ferments. Therefore, high amylopsin reading.

Case 2.—Percy K. Terminal.

Oct. 25, 1914, amylopsin, 100; trypsin, 500. Diarrhea (tuberculous).

Dec. 31, 1914, amylopsin, 25; trypsin, 10,000. Death.

Diet was fluid, chiefly; some starch, no protein, hence high trypsin readings, due to non-neutralization.

Case 3.—May S. Far advanced.

May 30, 1914, amylopsin, 700; trypsin, 100. Weight, 118½. Anorexia.

July 25, 1914, artificial pneumothorax. Weight 118¾.

Oct. 15, 1914, amylopsin, 25; trypsin, 5,000. Weight, 129¼.

Oct. 29, 1914, amylopsin, 50; trypsin, 10,000. Weight 135. Convalescent.

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31. F...
...th. u. Therap. d. Ernährungs-

Intake, starches, no protein. After artificial pneumothorax, appetite for meat increased, weight increased, trypsin increased. Here, lung collapse reduced toxemia, and thus freed the digestive system from the influence of infection.

Case 4.—Margaret S. Far advanced.

March 2, 1915, amylopsin, 100; trypsin, 100. Weight, 93½.

March 5, 1915, pneumothorax (bilateral and extensive).

April 15, 1915, amylopsin, 0; trypsin, 5,000; general diet.

April 17, 1915, amylopsin, 0; trypsin, 100; 100 gm. protein.

April 19, 1915, amylopsin, 0; trypsin, 25; 250 gm. protein.

April 21, 1915, amylopsin, 0; trypsin, 0; 300 gm. protein. Weight, 89.

Losing ground; daily fever.

This was a bilateral, febrile case; appetite fair, worse lung collapsed to reduce septic absorption; fever dropped somewhat, cough and sputum ceased. April 15, the determinations were made on a general diet, which was chiefly starch; very little protein. In quantitative test, 100 gm. protein reduced the trypsin reading to 100 units, 250 gm. to 25 units, while 300 gm. entirely neutralized the secreted trypsin. Patient losing ground; febrile.

Case 5.—William S. Far advanced. Diabetes with tuberculosis. Protein diet.

Oct. 17, 1914, amylopsin, 50; trypsin, 0; wasting.

Starches given; weight gain at once. General improvement until influenza, bronchopneumonia, death.

Jan. 12, 1915, amylopsin, 0; trypsin, 100. Mixed diet. Death.

Case 6.—Hannah S. Far advanced. Weight on admission, Dec. 1, 1914, 107¾. No trypsin. Bed rest one month.

Dec. 12, 1914, amylopsin, 100; trypsin, 0.

Jan. 7, 1915, amylopsin, 0; trypsin, 100. Weight, 119 (a gain of 11 pounds); appetite better.

Jan. 13, 1915, pneumothorax. Trypsin index steadily rose after this.

Feb. 5, 1915, amylopsin, 0; trypsin, 0. Weight, 120. Appetite good.

March 3, 1915, amylopsin, 0; trypsin, 250. Weight, 122.

April 24, 1915, amylopsin, 100; trypsin, 1,000; 100 gm. protein.

April 26, 1915, amylopsin, 0; trypsin, 5,000; 250 gm. protein.

April 28, 1915, amylopsin, 0; trypsin, 10,000; 300 gm. protein.

General condition excellent.

Case 7.—Howard C. Far advanced. Weight, 122. Fever. Anorexia.

Jan. 5, 1915, amylopsin, 0; trypsin, 1,000. Weight, 117. Gastric distress.

March 22, 1915, amylopsin, 0; trypsin, 100. Weight, 116¾. No fever.

April 23, 1915, pneumothorax. Weight, 116¾. Fever.

May 1, 1915, amylopsin, 0; trypsin, 250. Weight, 117. General diet.

May 2, 1915, amylopsin, 0; trypsin, 10,000; 100 gm. protein.

May 3, 1915, amylopsin, 0; trypsin, 250; 250 gm. protein.

May 5, 1915, amylopsin, 0; trypsin, 1,000; 300 gm. protein.

No fever since pneumothorax. Weight, 125. Appetite good.

This patient was wasted, febrile and dyspeptic. Four months of rest in bed led to little improvement. Then pneumothorax on the worse lung was followed by almost instant change for the better; gastric symptoms disappeared. Trypsin index, May 1, was 250 units. May 2, the protein diet was reduced to 100 gm., resulting in a trypsin index of 10,000, with 300 gm. protein. May 5, trypsin was 1,000 units, or double the normal.

Case 8.—Hugh C. Far advanced.

Nov. 14, 1914, amylopsin, 25; trypsin, 50.

Jan. 5, 1915, amylopsin, 0; trypsin, 25.

March 6, 1915, amylopsin, 0; trypsin, 50. Bedfast.

Case 9.—Hannah P. Far advanced.

Nov. 20, 1914, amylopsin, 100; trypsin, 250. Weight, 136¾.

Dec. 23, 1914, amylopsin, 0; trypsin, 250. Weight, 137¼.

Feb. 1, 1915, amylopsin, 0; trypsin, 50. Weight, 134¼.

Feb. 19, 1915, pneumothorax.

March 6, 1915, amylopsin, 0; trypsin, 0. Weight, 135. Invalid.

Cases 8 and 9 both show low trypsin indexes. Both are far advanced. Both have extensive lung involvement. Patient 8 has been for many months confined to bed. Patient 9 has had fever from time to time, and is now an invalid.

These constantly low trypsin readings are the rule in far advanced cases not presenting any gastric or intestinal disturbance.

Case 10.—Vivian K. Incipient. Weight, 106.

Jan. 23, 1915, amylopsin, 0; trypsin, 0. Weight, 108.

Feb. 20, 1915, amylopsin, 0; trypsin, 250. Weight, 110½.

Case 11.—Violet I. Incipient.

Feb. 10, 1915, amylopsin, 0; trypsin, 0. Stomach pain after eating.

March 10, 1915, amylopsin, 50; trypsin, 25. Weight, 132.

May 20, 1915, weight, 130.

Generally better. Eats well.

Cases 10 and 11 are both closed cases, with poor appetite and poor digestion; prolonged bed rest brought improvement in both.

CONCLUSIONS

1. Pancreatic secretions are seriously diminished by toxins of tuberculosis, in any stage.
2. Rest (bed rest or pneumothorax), by reducing the production of toxins, aids in the return to a normal of these pancreatic secretions.
3. Persistently low trypsin readings are prognostically bad.
4. Low amylopsin values are of lesser prognostic importance.
5. All interpretations of indexes must be made with due consideration for anorexia, overeating and diarrhea.

2733 North Clark Street.

THE USE OF A LOAN COLLECTION AND PHOTOMICROGRAPHS

IN THE TEACHING OF PATHOLOGY TO STUDENTS OF MEDICINE *

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AND
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Perhaps one of the most obvious defects in the usual method of teaching pathology lies in the restrictions which are imposed on the student. Too often the method is such that all he can do is to memorize certain statements of the textbooks and instructors, and to fix in his mind the appearance of certain slides rather than to read the cell changes going on in the tissues and thereby gain a plastic living conception of the processes at work in the specimen being studied.

It is generally recognized that the method rather than any particular content is the essence of scientific discipline. As Oertel[1] says:

"Medical education is primarily directed toward the development of the powers of observation and of a scientific method of thinking." One of the chief problems, therefore, in offering a course in pathology is to present it so that the student may be able to visualize the processes and at the same time keep the theoretical explanations separate from established facts and from

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* From the Department of Pathology and Bacteriology of the Ohio State University, College of Medicine.

[1] Oertel, Horst: The Anatomic Histological Processes of Bright's Disease, Philadelphia, 1910, p. vii.

his own observations. This must be done with minimum loss of time and energy. The time which can be allowed pathology in the medical curriculum is, at best, altogether too short. Every minute must be used, therefore, with the greatest degree of efficiency.

It is the purpose of this paper to give an account of the method in use in the laboratory of pathology at the Ohio State University, College of Medicine, in the course offered to second-year students of medicine. the use of a loan collection and photomicrographs, lution has been reached, to a certain extent, at for the problems outlined above.

ormerly much time was consumed in the mounting and staining of sections. This was cut down somewhat by staining the sections before handing them out to the class. The giving out of sections to all the members of a class each year necessitates the use of some rather indifferent material. For, as Dr. Mallory[2] says, "It requires patience often extending over many years to collect the tissues most suitable for study and teaching purposes." If this is true in the larger medical centers, it is the more applicable elsewhere. Further, the time consumed in the preparation and sketching of sections limits very decidedly the amount of work which can be covered in the time allowed to pathology in the medical curriculum.

Experience has taught us to agree with Drs. Steenland and Weiskotten[3] that much valuable time may be saved and much better preparations can be presented by the use of a loan collection. On the introduction of such a collection, we were able to increase the number of slides studied over 50 per cent. This, therefore, not only gives an opportunity to present slides typical of the various lesions which could not be introduced into the course before on account of a lack of time, but also allows the introduction of more stages in the development of the lesions than could be taken up with the student under the previous method. In this way the lesions can be traced in their development from the simplest to the most complex. The presentation in this way of the subject in its order of sequence gives the student training in the analysis of biologic problems. This training will stand him in good stead later in the study of clinical cases in which he will meet the same consequents and their causal antecedents. The use of this method affords the student a larger experience and, what is more important, it presents to him more of the evidence on which conceptions of pathologic processes have been built in the past. In this way he gains a sense of the reality of his own conceptions. The subject of pathology becomes something more than a series of dry facts to be memorized. It becomes a living process.

It may seem that this works a hardship on the student by depriving him of his collection of pathologic sections, but the man who will really need a personal collection after the course is finished is the man who is especially interested in the subject. If the student "goes in for pathology," he must do more work than is covered in the regular courses of the medical curriculum. In that case the advanced work will give him ample opportunity to make his own collection, and a collection made in this way will have far more value to him than one which has been prepared for him.

The sketching of a microscopic preparation is very apt to become a mechanical process unless each student is given a great deal of painstaking, personal attention, and at best it consumes much time. In our laboratory, this time has been utilized in another way and with better results for our classes. As stated before, photomicrographs have been made of the important areas in each section. Each student in the last four classes taking the work has been given a set of these photographs to be pasted in his laboratory notebook.

In making these photomicrographs, the degree of magnification has been determined for each section. Where it is advisable to show the cellular elements out of which the lesion is built, a high dry or 1.9-mm. oil immersion lens is used; where it would appear better to orient the student first and then allow him to work out the cytology for himself, a 16-mm. lens is employed, and the fields to be given special attention are marked on the photograph. Even with the higher magnifications, it is of advantage to have the important areas marked in such a way that the student may locate them readily and indicate them specifically in his notes.

The method of conducting the class in the laboratory is to give out the numbers of the slides to be studied (the organ or injurious agent whose reaction is to be considered having been previously assigned). After the section, together with the photograph and the text has been studied by the class, an informal quiz is given. Various members of the class are called on to give their interpretation of the processes under consideration, and a description of the areas or cellular elements which are marked on the photograph. The remainder of the class follow the progress of the student being quizzed by observing their own sections, photographs and notes, making such corrections in the latter as they deem necessary. After the quiz is over, the demonstrators pass around the class in an endeavor to clear up such obscure points as may be necessary for the individual student. Frequent slide reviews are given in which "unknown" sections are used. Free access is allowed to textbooks, notes and other references. Often the gross specimen or an abstract of the case record or both are given out with the sections. The student is required to write his description and interpretation of the cases under consideration. The papers are then read and discussed with the class.

By this method, the student has most of his time for study and the correlation of the conditions observed in his specimens. Another advantage found in the use of the photomicrographs is that in the recitation definite objects are under consideration, and the discussion can be limited to an accurate description which every one can readily follow.

By this method, we have been able to increase the amount of work covered about 60 per cent., or about 110 per cent. over that which was covered before the introduction of the loan collection and photomicrographs.

The saving of time in this way allows not only for introduction of various experimental demonstrations fashioned after the suggestion of Professor Pearce,[4] but also for the exhibition of many more gross specimens illustrating the anatomic lesions at the same time that the histologic changes are being studied. It also permits of more frequent slide reviews, which are of great value in stimulating the students to make more careful observations.

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[2] Mallory, Frank : The Principles of Pathologic Histology, Philadelphia, 1914, p. i.

[3] Steenland, H. S., d Weiskotten, H. G.: The Histologic Loan Collection and Relieving he Curriculum, The Journal A. M. A., Jan. 10, 1914, p. 125.

[4] Pearce, Richard M.: The Teaching of Experimental Pathology and Pathological Physiology to Large Classes, Bull. Johns Hopkins Hosp., 1912, xxiii, 170.

The laboratory notebooks obtained by this method are in every way superior to the ones which had been obtained formerly. At the end of his course, the student possesses a manual in which the photomicrographs have been neatly mounted, beneath which there is a brief but careful description of the lesion pictured, together with an abstract of the textbooks and the lectures. Such a manual possesses considerable value to the student as a work of reference. This method, used as a routine in the laboratory, has met and overcome several of the objections usually raised to the course in pathology. It has secured greater application on the part of the students during the laboratory periods, a greater amount of outside reading, more concise and accurate descriptions in the notebooks, and increased efficiency in the slide reviews.

No doubt there is a valuable training to be derived from the sketching of histologic preparations by the student, but we are convinced that the sacrifice of time is too great for its employment in the regular course in pathology offered to second-year students of medicine. In those courses in which accurate observation of fixed morphologic structures is the important thing, as it is in normal histology, sketching should be employed; but in pathology it is more important that the student should develop the ability to give an accurate word picture, and still more important that he should be trained to visualize the changes taking place so that they become a living progressive process to him.

The labor and expense attached to such a method are not excessive. After the negatives are made, the prints may be done by a professional photographer, who can be induced to do large lots at a very reasonable rate. The photographs can be sold to the student at cost, and the price will not exceed that of laboratory books in the other branches. The cost can still further be reduced, we have found, by the use of engravings made from the photomicrographs.

Students, of course, are given the privilege of making a collection of slides for themselves, and it has so chanced that with each succeeding class trained by this method, more men are preparing their own collections. Only those men in whom a real interest for pathology has been aroused avail themselves of this opportunity.

SUMMARY

The use of the loan collection and photomicrographs in the teaching of pathologic histology possesses the following advantages:

1. It compels the student to write concise and accurate descriptions of the specific cellular elements and of the lesions which they build up.
2. It allows the discussion or quiz to be followed in detail with much greater ease.
3. It gives time for the introduction of more experimental demonstrations.
4. It permits of closer correlation between the gross and the histologic pathology.
5. It enhances the value of the notebook.
6. Most important of all, it opens a greater opportunity for the student of medicine to do some thinking for himself.

ORBITOPALPEBRAL EMPHYSEMA CAUSED BY PERFORATION OF A DENTAL CANAL

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Orbitopalpebral emphysema is not a very common condition, but when it is found it is always of traumatic origin. Ordinarily it is the result of a fracture of the nasal, lacrimal or ethmoidal bones. It may, however, occasionally be caused by the dentist during the process of drilling the dental canal, as can be seen from the case which I here report. The condition is practically harmless and requires no treatment beyond a pressure bandage.

The diagnosis of the condition is comparatively easy. There is a sudden swelling of the lid and adjacent tissues, with no signs of inflammation, no redness, no pain. The swelling does not pit on pressure, but quickly rebounds, and there is a peculiar crackling sensation felt by the palpating finger, which results from the movement of air bubbles under the fingers. There is no exophthalmos in this variety of emphysema. Exophthalmos is present in emphysema of the orbit, but not in emphysema of the lid. Properly speaking, this form of emphysema should be termed "palpebrofacial," for usually the face is involved in the edema in addition to the lids. None of the textbooks mention mechanical perforation of the dental canal as a possible cause of emphysema, therefore this case should be placed on record.

Miss L. came to me accompanied by her dentist, who gave me the following history. While drilling on the mesial root of the right upper first bicuspid tooth he felt as if his burr entered a vacuum. He then tried to explore the region with a broach, which went in for a considerable distance. During this operation the patient felt no pain except some pressure sensation, which she attributed to the pressure of the dentist's thumb on her cheek. When the broach was withdrawn her lids suddenly began to swell, so much so that the right eye was entirely covered by the swelling of the upper and lower lids. The swelling spread all the way down the face and even the neck. I saw the patient about an hour and a half after, and found the face swollen, the lids, very markedly edematous, covering the right eye. The lids, however, could easily be separated. The asymmetry of the face as a result of the unilateral swelling gave the patient a hideous appearance. The skin of the lids and face was not tense and had no signs of inflammation. There was no pitting on pressure as the skin quickly rebounded. There was, however, marked crepitation under the finger's touch all over the lids and face and even down the region of the neck. Sneezing or blowing the nose had no influence on the swelling. My diagnosis was of course clear and easy: Palpebral emphysema caused by perforation of the dental canal into the antrum of Highmore and the upper bony roof of the antrum, through which the air must have gone into the subcutaneous tissues. This condition could easily be differentiated from a cellulitis by the sudden onset and the absence of inflammatory symptoms, such as redness and pain, and, of course, by the crackling sensation under the finger.

I applied a pressure bandage and the next day the swelling was considerably less. On the fifth day, while the swelling was practically all down, there was still present a slight crackling sensation indicating that not all the air had been absorbed. Seven days elapsed before all the symptoms disappeared. No other treatment was given except the pressure bandage for two days.

917 Spruce Street.

AN UNUSUAL TYPE OF GROSS CARDIAC ARRHYTHMIA *

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Gross irregularity of the pulse signifies, as a rule, that fibrillation of the auricles is present with the resultant ventricular arrhythmia. Rarely a gross sinus arrhythmia not dependent on respiration or an auricular flutter with irregular grades of heart-block may produce a condition of the pulse simulating that of auricular fibrillation.

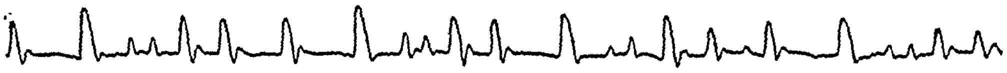

Fig. 1.—Radial pulse tracing showing marked arrhythmia. Time interval, 0.2 second.

In the case here described, an unusual cause of the gross arrhythmia was found, consisting of a curious aggregation of ectopic contractions arising from at least three different points in the ventricles, with now and then an aberrant beat of supraventricular origin slipping in (Figs. 1 and 2). The time intervals between the ventricular complexes are shown below the electrocardiogram. On several occasions while the patient was under observation at the Massachusetts General Hospital this arrhythmia was found. At other times there occurred a bigeminy due to ventricular premature beats alternating with the beats of supraventricular origin (Fig. 3). Rarely a short run of beats of normal rhythm occurred, and on such occasions pulsus alternans was found to be present. Electrocardiograms showed the existence of defective conduction in the right branch of the atrioventricular bundle.

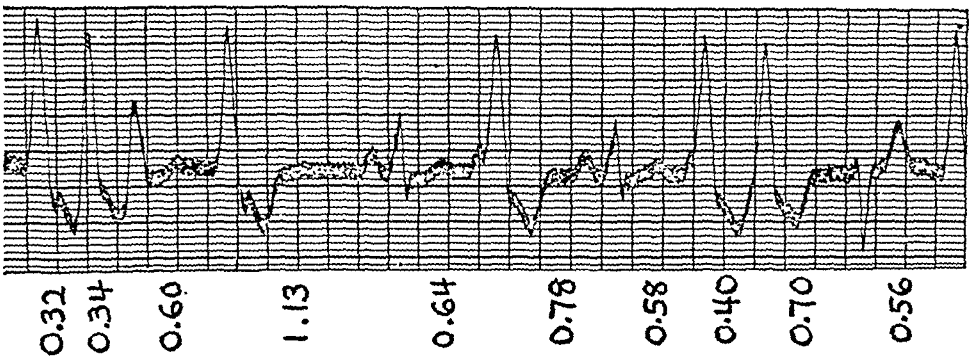

Fig. 2.—Electrocardiogram, Lead II, showing eleven ventricular complexes, of which nine are ectopic and only two produced by the cardiac impulse arising in the auricle. These two beats of normal rhythm are aberrant, that is, distorted, as the result of a damaged atrioventricular conducting system. Below the electrocardiogram there are recorded the measurements in fractions of a second of the intervals between the ventricular complexes. Abscissa, 0.2 second; ordinate, 10^{-4} volt.

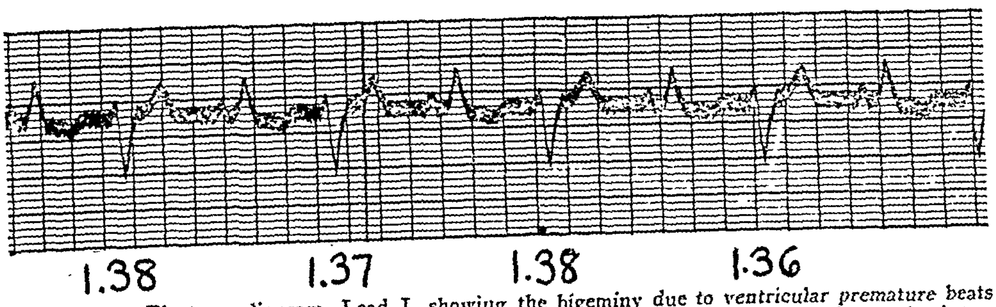

Fig. 3.—Electrocardiogram, Lead I, showing the bigeminy due to ventricular premature beats alternating with the beats of normal rhythm. Below the electrocardiogram are shown the intervals in fractions of a second between the beats of normal rhythm. Abscissa, 0.2 second, ordinate, 10^{-4} volt.

CLINICAL RECORD

History.—F. H. R., man, aged 61, married, packer in a candy factory, entered the wards of the Massachusetts General Hospital, April 8, 1915, for the relief of dyspnea and spells of weakness. Family and past history were unimportant save for the fact that his wife had had two miscarriages. One son was living and well. Patient denied venereal disease. No alcohol or tobacco was used.

The present complaint begins with the story that twelve years ago while walking home from work he fell unconscious in the street and was taken to a hospital, where he remained for three hours, rapidly recovering his senses and strength. He was told at that time by the doctors that he had "heart trouble and must take things easy." Ever since this experience the patient has noticed that he has been dyspneic on exertion. Six weeks before admission to the hospital the dyspnea increased so that he became short of breath on slight exertion. Four weeks later he was seized with an attack of syncope lasting half an hour shortly after he had carried a hod of coal up a flight of stairs. Following this attack he became more dyspneic, and suffered severe epigastric pain necessitating his staying in bed during the week following. For the four or five days just preceding admission to the hospital he had somewhat improved.

Physical Examination.—The patient was lying comfortably flat in bed without dyspnea or cyanosis. Pupils reacted sluggishly to light. Heart enlarged; apex in the sixth interspace, transverse measurement of heart by Roentgen ray, 17 cm.; width of great vessels at second space, 5.5 cm.; systolic murmur heard over precordia, reduplication of second sound at base. Pulse irregular (Fig. 1). Liver not enlarged. No edema of lungs or extremities.

Clinical Observations.—Blood pressure, from 145 to 150 mm. Hg systolic, and from 70 to 90 diastolic. Urine normal. Blood normal. Wassermann test negative. Spinal fluid normal. No fever. Respiratory rate from 19 to 28 per minute. Pulse rate from 90 to 110 per minute.

The effect of exercise, atropin (1/10 grain subcutaneously), and vagal pressure on the cardiac arrhythmia was tested, but no change in the degree of irregularity was observed. April 24, 1915, the patient left the hospital feeling somewhat improved after his sixteen days' rest in bed. No digitalis was given. July 15, 1915, an electrocardiogram showed a bigeminy very similar to that of Figure 3, but at times interrupted by numerous ectopic ventricular contractions.

SUMMARY

An instance is recorded of periods of gross cardiac arrhythmia due not to auricular fibrillation or sinus arrhythmia but to an unusual combination of ectopic ventricular contractions.

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* From the Medical Service of the Massachusetts General Hospital.

TRICHINOSIS SIMULATING FRONTAL SINUSITIS

A REPORT OF THREE CASES

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During the past two years I have seen three cases of trichinosis, each referred as a probable case of frontal sinusitis. Two of these cases were seen in private practice and the third was referred to the Department of Laryngology at the Vanderbilt Clinic.

As is well known, the symptomatology of trichinosis is most variable. Most textbooks emphasize its resemblance at the onset to typhoid fever and its symptoms are usually classified under (1) intestinal or choleriform stage; (2) rheumatic or typhoid phase. It sometimes simulates appendicitis and is frequently called "rheumatism" — that facile term so often connoting only our ignorance. From a fairly comprehensive search of the literature I find no mention of cases simulating frontal sinusitis.

Case 1.—Mrs. B. R., aged 31, a physician's wife, was first seen with Dr. C. G. Coakley, Feb. 10, 1913. The patient at that time complained of a severe "cold in the head," excessive thick nasal discharge from both nares, and headache. Duration, three or four days. Examination revealed infection in both maxillary antrums. The antrums were cocainized and punctured beneath the inferior turbinates and a large amount of thick mucopurulent secretion was washed out of both antrums. The antrums were washed out daily for about ten days, when the patient was discharged cured. Patient remained apparently well until March 15, 1913, when she began to have pain in and about the left eye and left frontal region. In view of the fact that she had but recently recovered from an infection in her antrums, her husband suspected that she might have frontal sinusitis and sent her in to the office. Examination of the nares revealed only a slight amount of congestion of the mucous membrane. Transillumination of the sinuses showed that the left frontal sinus illuminated well over a moderate sized area; the right frontal illuminated poorly over a very small area; the antrums illuminated equally and well. She was referred to Dr. E. W. Caldwell for roentgenograms of the sinuses and to Dr. John E. Weeks for examination of the eyes. The roentgenograms showed an absence of a frontal sinus on the right side, a fronto-ethmoidal cell taking its place; on the left side the frontal sinus was of moderate size and of normal appearance. The antrums were also normal. Dr. Weeks reported the eye examination as negative. Nasal examination remained negative. It was now noted for the first time that the patient had an edema of both upper lids, but no edema elsewhere. Trichinosis was suspected and on questioning the patient it was learned that she had recently eaten pork and that she had had a slight amount of muscular soreness in the region of the left deltoid insertion. She was sent to the Rockefeller Institute, where the diagnosis was confirmed and the following blood count reported: white blood cells, 14,000; eosinophils, 22 per cent. The case ran a mild, uneventful course terminating in recovery.

Case 2.—Mr. A. was referred to the nose and throat department of the Vanderbilt Clinic from the outpatient department of the Knapp Memorial Eye Hospital. He complained of pain in and about the left eye. As examination of the eyes at the hospital had been negative he was referred to the clinic as having a probable frontal sinusitis. Examination revealed an edema of both upper lids, more marked on the left than the right, but no edema elsewhere. Nasal examination was negative. His frontal sinuses illuminated equally and well as did also the antrums. A diagnosis of trichinosis was made and a differential blood count, made at once in the college laboratory, showed 20 per cent. eosinophils. This patient gave a history of having indulged freely in pork and also stated that he had had "rheumatism" in many of his long muscles. He was referred to the Presbyterian hospital but did not enter there and was consequently lost track of.

Case 3.—Miss L. B. B., aged 32, a settlement worker, was referred to me by Dr. T. H. Russell on June 28, 1915. Patient had been ill for about a week, suffering from nausea and vomiting, pain in the right shoulder and in right chest posteriorly. Physical examination had been negative except that a small area of dulness was found in the right chest posteriorly; no change in the breath sounds, no râles or friction rubs were heard. On the day I saw her she had complained of pain in the region of the left upper lid and left frontal sinus, and as she had a slight "cold in the head" it was thought well to eliminate the possibility of an acute frontal sinusitis. Examination showed edema of both upper lids and a moderate amount of puffiness of the face, but no edema elsewhere. There was no muscular tenderness. Examination of the nose and accessory sinuses was negative. She gave a history of having eaten pork frequently. A diagnosis of trichinosis was made and a blood count ordered. The count was as follows: white blood cells, 15,000; polymorphonuclears, 77 per cent.; lymphocytes, 16 per cent.; eosinophils, 6 per cent.; transitionals, 1 per cent. The next day she developed very severe muscular pains in both lower extremities and in the left wrist and left hand, and a moderate pericarditis. Vomiting persisted and the patient was extremely ill for the next week. Two more counts were made at intervals of three days each and showed an increase of eosinophils, first to 14 per cent. and later to 22 per cent. Her symptoms gradually subsided and she made a complete recovery.

The diagnosis in all three cases rested on (1) edema of the lids (and in Case 3 of the face also) with absence of edema elsewhere; (2) negative nasal findings referable to the accessory sinuses; (3) the history; (4) the eosinophilia. It will be noted that in all these the "presenting symptom," as Cabot so well terms it, was pain in the region of the eye and frontal sinus; in only one case (Case 3) was the so-called choleriform stage present.

41 West Eighty-Third Street.

Chloroform in the Treatment of Insolation.—Case 1.—Man, aged 37, was found in a state of unconsciousness from insolation. After two hours of futile effort to revive the patient, I concluded to try chloroform as an experiment. I gave it very lightly for five or ten minutes by inhalation, and rapid improvement in symptoms occurred. This led me to further experiment in the two cases following.

Case 2.—A robust, well-nourished boy, aged 4, after three hours of unconsciousness, was found with a temperature of 107, pulse above 200, stertorous respiration, profound stupor and complete relaxation. The patient was stripped of clothes and laid on a bed, and chloroform was administered cautiously by inhalation. No other treatment was given the first half hour. In twenty minutes the pulse had dropped to 160, the respiration was quieted, and in half an hour the pulse was 145, the temperature 105, respiration was greatly improved, tonicity of muscles was returning, and the child manifested some return of consciousness. From this time on, the ordinary treatment was given with uneventful recovery.

Case 3.—Man, aged 25, was overcome by heat while working in the hayfield in the afternoon. On arriving at 8 p. m., I found the patient in a profound stupor and complete relaxation, pulse 165, temperature 106.6. Except for the removal of some light clothes, chloroform cautiously given by inhalation was the only treatment in the first half hour. Results were similar and equal to those in Case 2, followed by uneventful recovery under the ordinary treatment.

George C. Hanson, M.D., Charlson, N. D.

New Instruments and Suggestions

A SIMPLE INSTRUMENT FOR THE INDIRECT TRANSFUSION OF BLOOD

Bertram M. Bernheim, M.D., Baltimore
Instructor in Clinical Surgery, Johns Hopkins University

Briefly, the apparatus consists of two needles, one of which is inserted into a vein of the donor, the other into a vein of the recipient, and a U-shaped tube, at the midpoint of which is a pocket into which a hollow revolving plug is fitted. This plug is open at one end so as to accommodate the nozzle of a record syringe (the plug may be made to fit any other form of syringe desired), but is closed at its other end, the point of exit being in one side so as to correspond to the openings of the two arms of the U into the central pocket. The distal ends of the arms, then, fit into the needles which have been placed in the donor's and the recipient's vessels. A circuit having been completed in this manner, blood is withdrawn by means of a syringe from the donor, and the plug is gently rotated for a half circle until its lateral opening faces the opening of that arm of the U leading to the recipient's vein, whereupon the syringe is emptied. Reverse rotation brings the plug's opening into apposition with the intake tube, whereupon the syringe is again filled only to be promptly emptied into the recipient by a half rotation of the plug similar to the first movement. In other words, the syringe draws up blood from an intake tube and empties it into an outgoing tube, the rotating plug acting as an intermediary between the two tubes.

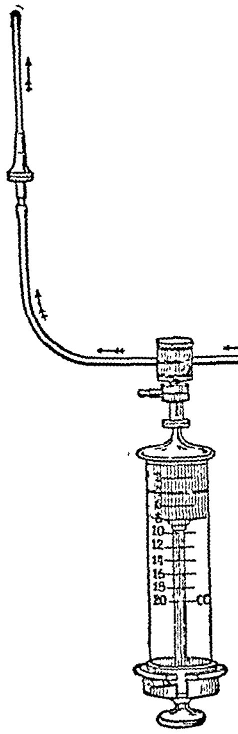


Fig. 1.—Instrument for indirect transfusion ready for use. Arrows indicate direction of blood current.

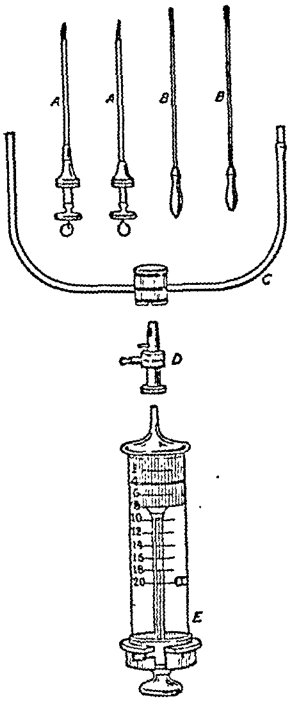


Fig. 2.—Instrument disconnected: *AA*, needles; *BB*, obturators; *C*, U tube; *D*, revolving plug; *E*, syringe.

A small metal ball attached to the plug facilitates its rotation, and another metal pin prevents its rotating more than a half circle by working in a specially constructed slot. Furthermore, the plug is ground into its pocket, and, though easily removable, fits so perfectly as to prevent entrance of air into the syringes. Worthy of note, too, is the fact that when the lateral opening of the plug is "set" for one arm of the U, the other arm is effectually blocked, thus preventing any leakage.

In this manner successive syringefuls of blood may be withdrawn from the donor and emptied into the recipient with accuracy, precision and rapidity. And inasmuch as no syringe should ever be refilled more than two or three times without cleansing, it is quite simple as well as advisable to wash a few cubic centimeters of salt solution into each arm of the U as each fresh syringeful is taken up. Thus clotting is avoided. Should, however, a clot arise or should it be necessary for any reason to discontinue the transfusion temporarily, the entire apparatus may be disconnected, washed out and held ready for continuing the operation.

The bore of the needles and tubes is 2 mm., and the arms of the U are separated from each other by 12 cm., a distance quite sufficient to permit of easy manipulation when applied to apposed arms of donor and recipient. It might be added, too, that in addition to being constructed to fit special needles, this U tube is also made to fit the two-pieced tube devised by me for direct transfusion (The Journal, April 6, 1912, p. 1007). This was done because occasionally it is impossible to see the desired veins, and incision is required. In such a contingency the two-pieced tube may be easier to work with than the needles. And there is no reason why, if one is in a great hurry, the intake tube should not be placed in the radial artery instead of a vein.

2313 Eutaw Place.

A NEW MUSEUM JAR FOR THE PRESERVATION OF EYE SPECIMENS

Henry Albert, M.D., Iowa City, Iowa

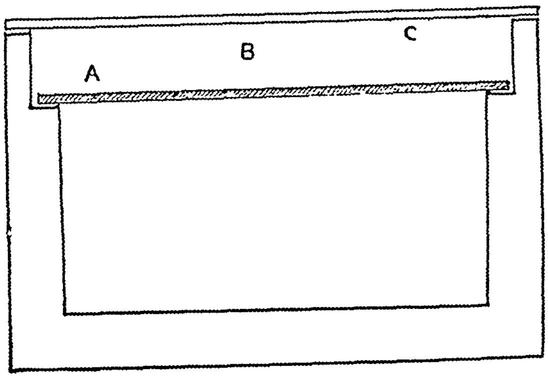
The difficulties encountered in the proper mounting of specimens of eyes in a permanent form have been so great that many persons who obtain eye specimens are deterred from mounting them because of the fact that a supposedly permanent preparation usually proves a disappointment in the course of a year or two.

There is room for much improvement in the present-day methods of mounting and labeling museum preparations of eyes.

The features desired in a museum jar are:

1. Ability to display well the structures desired.
2. Good appearance and convenience of handling specimen jar.
3. Permanency of the preparation.
4. Proper and permanent method of labeling the specimen.

Several of the museum jars for the preservation of eye specimens, now on the market, display the first two features. None of them, to the proper degree, exhibit the last two, especially when all of the desired features are considered.



Jar for the permanent preservation of eye specimens. *A*, inner cover of opaque white glass; *B*, space between two covers to be filled with cement; *C*, outer cover of transparent glass beneath which label is attached.

With the idea of remedying such defects, I have so modified one of the commonly used jars as to insure both permanency of the specimen and proper labeling, in connection with the other desirable features which the jar already possesses (see illustration). This is accomplished by a double cover which is, as usual, placed behind the specimen. The inner of the two covers is made of white glass to furnish the proper background for the specimen. The outer cover is made of transparent glass beneath which the label is placed—thus insuring the permanency of the label. Between the two covers is a space which is filled with the proper kind of sealing material. This entirely prevents evaporation of fluid from the jar and insures the permanency of the specimen. The distinct advantages of the jar here described, over the jars now on the market, are that it insures: (1) permanency of the preparation; (2) neatness and permanency of the label.

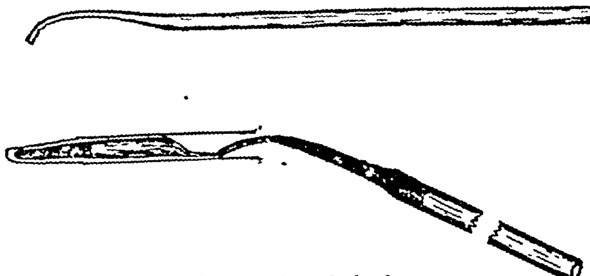
The jar here described is manufactured by F. A. Hardy & Co., Chicago.

Medical Laboratory Building.

A NEW PIPET

J. E. Huber, M.D., Peoria, Ill.

Some time ago I had difficulty in removing small quantities of separated serum from a small, narrow centrifuge tube. The usual method of capillary attraction with a fine-bore glass tubing pipet failed, owing to the fact that if I tipped the tube sufficiently for the pipet to act, the serum movement would cause the sediment to mix, defeating the object, which was separation of the serum. In a wide tube it is not difficult to raise the capillary point of the pipet higher than the finger end, high enough to increase the flow materially.


Pipet and method of use.

Narrow tubes are much more of a problem. My experience with Wright's pipets for blood collection gave me an idea which I have not seen mentioned. The end of the drawn out part of the pipet, a millimeter in diameter, is carefully flamed so that it curves about 45 degrees, say about one quarter-inch from the tip, as in the accompanying illustration. With such a pipet it is possible to withdraw fluids from watch crystals held on the flat, and from tubes which are too small to permit the use of a straight pipet. It is only necessary to have a clean pipet, and touch the curved end to the liquid, keeping the finger end lower than the curved end. Capillary action will fill the narrow tube beyond the distal curve, and the siphon action does the rest. Its action is instantaneous with aqueous liquids; with serum it is a little slower, but it will drain completely any kind of a tube, straight or curved.

It is simpler than the rubber nipple pipet, and is under better control, as the release of pressure on the nipple sometimes is great enough to cause currents that whirl up the sediment and spoil the experiment.

THE PAINLESS DRESSING

S. S. Gale, M.D., Roanoke, Va.

The dressing is yellow petrolatum with 10 per cent. boric acid incorporated in it. This boric acid ointment is prepared by the druggist and placed in a tin can. The regular petrolatum can of 1 to 5 pounds is an excellent container.

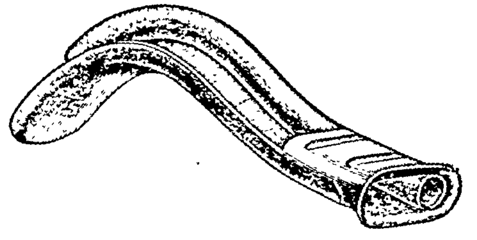
At each dressing the can containing the ointment is placed in a water bath and allowed to melt. This melting also resterilizes the ointment for each dressing. After the ointment has thoroughly melted it is poured into a large, flat, sterile pan. Pieces of gauze of various sizes and thickness, depending on the nature of the wound, are saturated with this melted ointment. After the wound has been sponged off, preferably with alcohol and normal saline, warm dressings are applied directly to the wound surface. These dressings are changed as often as is necessary, depending on the nature of the wound. When large areas are to be covered, it is usually best to have rolls of gauze about 8 inches broad and as many thicknesses as are necessary. These rolls are placed in the melted ointment and thoroughly saturated; then they are unfolded and applied directly to the wound. The greasy dressing can then be covered with plain gauze and held in place with a roller bandage.

This dressing does not dam back secretions, nor does it allow the granulations to embed themselves in the meshes of the gauze, and it can be removed absolutely without any pain. It will not dry out for several days. To my mind it is the ideal dressing in a large number of cases in which there is a large raw area to be covered.

A PHARYNGEAL TUBE COMBINING REBREATHING AND INSUFFLATION

Frank Wilcox Pinneo, M.D., Newark, N. J.

In all inhalation anesthesias the most frequent and important embarrassments to respiration are obstructions in the air way. Of all causes of obstruction the tongue falling back on the glottis is altogether the most common. As this fault in technic is within the control of the anesthetist and always removable, means to facilitate holding the tongue forward are practicable without the necessity of holding the jaw forward with the hand. There has been developed in insufflation an improved method over any kind of mask for administering ether, and pharyngeal insufflation has proved that the advantages in almost all kinds of cases may be secured without the necessity of intratracheal apparatus. When the nasal catheters are not used, but introduction by mouth is preferred, the combination of a rebreathing tube, to keep the tongue forward, and a tube for insufflation of the ether is a great convenience, and for this purpose the one shown in the illustration has been devised. It is a one piece metal blade with upturned sides to fit the contour of the tongue, having a channel for introduction of an oral catheter, 5 inches long; is curved from lips to pharynx, the mouth end being a flattened tube and adjustable for different sized patients. Its advantages are: 1. It provides for automatic holding of the tongue forward without other means. 2. It has not the objections of a closed tube, being an open blade with channels easily cleaned. 3. It can be used in patients of different sizes. 4. It has a channel for introduction of an oral catheter for pharyngeal insufflation, the catheter not being part of the pharyngeal tube. 5. The anesthetic may therefore be stopped while the blade remains in place. 6. It is efficient in holding the tongue forward without being so cumbersome as a tube like Connell's or a fenestrated frame like Lumbard's. 7. It is efficient for rebreathing, keeping the teeth and lips apart and the tongue forward. 8. It does not get clogged with mucus or blood.


Rebreathing tube combined with a tube for insufflation of ether.

199 Garside Street.

The Returns of Medical Practice.—For a livelihood, the practice of medicine brings in slow return, depending on location and opportunity. Success is laggard, as a rule, and even when emoluments balance expenditures, the profit in the practice of medicine is not considerable. The exceptional physician may grow well to do through fortunate investment, but outside of the larger cities, few get rich.—Isadore Dyer, M.D., *New Orleans Med. and Surg. Jour.*

Therapeutics

LEUKEMIA

Three papers on this generally fatal disease appear in the *California State Journal of Medicine*, September, 1915. The writers of these articles very practically present the treatment of leukemia which has shown the greatest success in prolonging a fatal termination.

Oliver (*loc. cit.*, p. 355) defines leukemia as "a malignant (idiopathic) hyperplasia affecting the leukocytic forming tissues, which results in an enormous increase in the production of white blood corpuscles." Only one type of white corpuscle is generally increased; the other types may be diminished. Occasionally more than one type of corpuscle is increased. The classification now accepted is that of Ehrlich, viz., the lymphatic and the myeloid, depending on the kind of cell that is increased in number. In lymphatic leukemia not only the lymph glands but also the spleen and other lymphoid tissue of the body may be affected, and even the bone-marrow. At any time during the course of the leukemia an acute infection may cause a rapid diminution in the numbers of leukocytes. Even slight infections in these cases of leukemia may cause death, or, if the patient recovers, the number of leukocytes rapidly again increases.

Boardman (*loc. cit.*, p. 348) has treated three cases of leukemia with benzene, and has also reviewed the literature since Korányi first suggested this treatment of leukemia, in 1912. Boardman comes to the conclusions that the benzene treatment of leukemia is the most successful yet offered; that the treatment is applicable to all forms of chronic leukemia; that when properly administered there is little danger from the treatment, but that the improvement is generally perhaps only temporary. In combination with the Roentgen-ray treatment, however, benzene treatment should be tried in all cases, except perhaps when there is nephritis.

BENZENE TREATMENT

Benzol is a trade name for benzene. It is used particularly in German literature. The benzol of commerce is impure and variable in composition. Selling[1] showed that the action of "benzol" is that of benzene. "Benzene, Medicinal," is described in New and Nonofficial Remedies, and Merck has a product on the market complying with this description.

There seems to be, as Boardman states, "abundant experimental and clinical proof that benzene acts on the leukoblastic tissues, causing a marked decrease in their functional activity in both normal and abnormal states."

During its administration benzene can cause headaches, dizziness, gastro-intestinal disturbances, and skin eruptions. It may cause too great a loss of leukocytes, hemorrhages, and nephritis, and, of course, it can cause death. The most frequent unpleasant symptoms from the therapeutic administration of benzene are gastric disturbances, which range in all degrees from simple irritation to loss of appetite, vomiting, hiccough, etc. This action on the stomach can generally be prevented by combining the benzene with olive oil and giving it in gelatine capsules during a meal. If in spite of such a method of administration the benzene tends to disturb the stomach, the capsules may be coated with phenyl salicylate, which will generally prevent their solution until they reach the intestines, where the alkalies will dissolve and break up the salicylate. More or less persistent headache and dizziness and kidney and bladder irritability should be danger signals, and heeded by withdrawal of the drug. It should also be noted that the action of benzene persists for some time after the patient ceases to take it; therefore too great care cannot be taken in watching the results of its administration. Not only must unpleasant symptoms be noted and good judgment used as to whether or not the drug should be continued, but the blood must be repeatedly counted, and when the white corpuscles are reduced to 20,000 the treatment should be immediately discontinued. The occurrence of anemia, which is occasionally produced, should also be the signal for discontinuance.

Boardman and other clinicians, notably Barker and Billings, caution against the administration of benzene while the patient is ambulatory. A patient with leukemia under the administration of benzene should certainly be at rest, and perhaps best in a hospital. The drug seems to be equally beneficial in chronic myelogenous and chronic lymphatic leukemia.

The method of its administration, as mapped out by von Korányi, and found by Boardman to be the most satisfactory, is to give it in gelatin capsules prepared just before the administration, each capsule to contain 0.50 gm. of benzene, with an equal amount of olive oil, these capsules to be swallowed during the meal. On the first day four capsules, representing 2 gm. of the benzene, should be given; on the second day 3 gm. or six capsules; on the third day 4 gm., eight capsules; on the fourth day, and to continue at this dose, 5 gm., ten capsules. This latter dose should not be exceeded, and should be reduced if the symptoms show undesired action. The drug should be stopped, as above stated, as soon as the white corpuscles have become as low as 20,000 per cubic millimeter.

ROENTGEN-RAY TREATMENT

Ruggles (*loc. cit.*, p. 355) briefly describes this treatment of leukemia. He finds that since Schultz, in 1901, and Pusey, in 1902, and Senn, in 1903, reported their first cases of leukemia treated with Roentgen ray, thousands have been so treated. The usual result of such treatment has been a more or less rapid diminution of the white count and an improvement in the general condition. There are records of patients so treated being still alive after five years, and some of them apparently well. Recurrences, however, generally take place. Ruggles finds the contraindications to Roentgen-ray treatment of leukemia to be acute forms and the coincident condition of profound anemia, and cachexia or fever. The primary effect of the treatment is that "in ten to fourteen days the lymphocytes, myelocytes, myeloblasts, and even polynuclears show swelling of the nuclei and a fragmentation of the chromatin." Later the protoplasm of the cells becomes clear or vacuolated and then the cells disappear. After a prolonged course of roentgenation the myeloid cells completely disappear from the lymph nodes and the spleen, the latter becoming "a fibroid mass containing scattered lymphoid cells."

The best results in leukemia are obtained by exposing both the long bones and the spleen to the Roentgen ray.

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[1] Selling: Bull. Johns Hopkins Hosp., 1910, xxi.

To sum up, the best treatment of leukemia, as far as our present knowledge goes, is the combined treatment of Roentgen ray and benzene. Benzene is a dangerous drug, and its action must be carefully watched. The Roentgen ray is a very potent force and may do harm, but the disease has always been, with unexplained intermittencies, almost invariably fatal; hence radical measures are excusable in its treatment. The old treatment of arsenic in enormous doses doubtless caused more deaths than can be attributed to benzene or to any late secondary action of the Roentgen ray.

INFANTILE SCURVY

This nutritional disturbance is becoming less frequent with the better understanding of what constitutes the proper artificial food for babes and young children.

Most proprietary foods, many cereal gruels, and overpasteurized or sterilized milks are deficient in one or more elements necessary for health and nutrition. Rarely even a mother's milk may be deficient in such elements as to allow scurvy in her nursing child.

The importance of the various amino-acids for the growth and nutrition has been shown by Osborne and Mendel, and their work has clarified many of the empiricisms while furnishing many surprises in food values. Suffice it to say that some of the amino-acids are vitally important for nutrition, and if they are absent a child will not grow normally.

In scurvy the child seems to be short of alkaline salts and the food must have been insufficiently supplied with these; or, in the case of cow's milk, too long boiling or sterilizing has so changed the normally contained alkalies as to make them unavailable for nutrition. Supplying these alkaline salts to the child generally cures the condition quickly. These salts are readily offered by the juice of fresh oranges or grapes, or by a potato soup.

This condition of infantile scurvy is referred to because, as it occurs less and less frequently, it is often overlooked or confounded with rheumatism. Infantile scurvy most frequently occurs after 6 months of age and before the age of more general feeding, that is, while the child's diet is still limited to one or two articles of food. On the other hand, rheumatic fever is very rare in children during the first eighteen months of life.

The symptoms of infantile scurvy are joint pains, muscle soreness, crying on being handled, not much fever, loss of appetite principally because the mouth and gums are sore, bleeding from the gums or slight hemorrhages into the mucous membrane of the mouth and gums. If the child has been long sick and long refusing food, he is pale; and he is anemic if there has been much bleeding. If the condition is early recognized, the child may not be ill nourished. The Roentgen ray will often show more or less swelling or infiltration of the bones, and a chest examination, according to Hess,[1] will show "an enlargement of the heart, and more especially of the right side."

Besides the oranges or potato food, the child should be given 1 drop of the tincture of ferric chlorid three or four times a day. The mother or nurse may add this drop of the tincture to each feeding of orange juice. The amount of orange juice given should be that from one or two ordinary sized oranges per day. If diarrhea is caused, grape juice or potato soup may be substituted. Diarrhea should be prevented, as it makes the prognosis less favorable.

The joints may be kept warm with cotton, much as is done in rheumatism. A proper food for the child should be selected, and he should be rolled in a comfortable carriage into the fresh air. He should not be handled more than is absolutely necessary until he has recovered from his soreness and joint pains. The gums may be gently massaged by the mother or nurse. A little cold water frequently given the child is very acceptable in relieving the burning and irritation of the mouth. If there is bleeding, swabbing with boric acid solution and touching oozing spots with suprarenal solutions is advisable. If there are large bleeding areas in the mouth, swabbing with hydrogen peroxid solution is efficient. It may also be well to give the child an extra amount of lime as presented by the glycerophosphate of lime in 0.05 gm. powder, three times a day.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLE HAS BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. ITS ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

RADIO-REM, OUTFIT NO. 4.—An apparatus designed for the production of radioactive drinking water by the action of radium sulphate. It imparts about 1.8 microcurie (5,000 Mache units) to 500 Cc. water daily. (The exact efficiency is stated and guaranteed at the time of sale.)

Actions, Uses and Dosage.—See general article on radium, New and Nonofficial Remedies, 1915, p. 262.

Radium Therapy Corporation, New York (Schieffelin and Co., New York). No U. S. patents or trade-marks.

Radio-Rem Outfit No. 4 consists of two wide-mouthed glass-stoppered bottles of about 250 Cc. capacity, each containing a fired, porous clay (terra cotta) plate, stated to contain radium sulphate. While each plate is designed to impart about 0.95 microcurie (2,500 Mache units) to the water which fills the bottle in twenty-four hours, the efficiency of each tablet is stated at the time of sale and the manufacturers agree to replace the tablets and to pay for the test, if examination by the U. S. Bureau of Standards shows them to be deficient.

A test made for the Council demonstrated that during the impregnation of the water with radium emanation, no radium is dissolved in the water.

Praises for New Hanover County, N. C.—In a recent issue of the *Public Health Reports*, the United States Public Health Service calls attention to the sanitary progress that is being made in the city of Wilmington and the county of New Hanover. During 1914, 1,856 flushed closets were installed in Wilmington alone; in Cape Fear township every home has a water closet and in Masonboro township, the same condition is found. The actual field work in this county has been done by sanitary policemen and through persuasion rather than by court measures. The Wilmington City Council has voted to make available the sum of $50,000 on loan for the exclusive purpose of changing privies to flushed closets.

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[1] Hess, A. F.: Infantile Scurvy, THE JOURNAL A. M. A., Sept. 18, 1915, p. 1003.

THE JOURNAL OF THE
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SATURDAY, OCTOBER 9, 1915

THE IMPROVEMENT OF THE PUBLIC HEALTH

Anniversary and other formal public addresses before scientific audiences are likely to be reminiscent in character, reviewing the achievements of the past and sounding the praises of those who are responsible for them. An uncommon and distinctly meritorious feature in the recent address of Prof. W. T. Sedgwick, as president of the American Public Health Association, is the frank and vigorous presentation, not only of the record of American progress in public health work but also of some of its shortcomings and failures.[1] A few of the latter deserve to be brought to the attention of a larger medical audience because they involve aspects of our daily life which are of primary concern to the physician and regarding which he may properly be expected to assume an attitude of vigorous advocacy. Usually it takes considerably more courage and initiative to condemn inertia or indifference in public authorities than to commend the successes for which they are responsible.

Among the much-needed sanitary improvements which we have failed thus far to achieve in proper degree Sedgwick classes the sewage disposal systems. The public water supplies are today receiving an increasing amount of intelligent consideration from health authorities; but there is too little care devoted to the problem of human excretory waste. Public comfort stations and comparable public sanitary conveniences are among the rarities in American cities and towns. This almost universal lack, in this country, concerns one of the very elements of public health.

Sedgwick maintains that typhoid fever has not yet been reduced as far as it should have been in America. He also is frankly critical regarding the situation in respect to American infant mortality. "We have as yet," he remarks, "and in spite of ample knowledge, failed to make our American milk supplies what they should be. This is partly because we have been too timid to insist that good milk not only costs more to make but is worth more for food, and must therefore be paid for, and partly because we have not yet taught the public as we should that the only safe milk is cooked milk, and for infants, milk that is pasteurized—preferably in the final container."

Among other items which receive the charge of "conspicuous failure" are present rural and industrial hygiene and sanitation, and the problems of alcoholism and venereal disease. We are reminded that in many cities the streets—the playgrounds of the poor—are disgracefully dirty, and that we have not done all we might for the prevention of blindness, of tuberculosis or of cancer. Our vital statistics are not yet either complete or trustworthy; our health boards are too often loaded up with political refugees, political doctors, and ignorant or incompetent laymen. Our health officers are frequently untrained, ill-paid, or only part-time employees of a no-time board. It is not denied that great progress has been witnessed in many of these fields of public health endeavor. Sedgwick's attitude is rather that of a scientist impatient at the slowness with which modern contributions to knowledge have been put to use in public practices.

Sedgwick makes a further timely comment in directing attention to the neglect of what he terms preventive personal hygiene in contrast with preventive medicine and preventive sanitation. By this he means the study and care of the individual in those aspects of correct living to which we recently referred.[2] It may not be comforting to be told that even our best medical schools pay but scant attention to the manifold aspects of preventive hygiene and sanitation and that "the best teaching of today is to be found, not in the text-books or the schools, but in the leaflets issued and distributed by certain leading boards of health and life insurance companies." Criticism becomes a reproach only when it is never heeded and the better paths to which it points are never followed.

EFFICIENCY OF THE BODY AS A MACHINE

Ever since Count Rumford first suggested that the muscular work of two horses produced enough heat to boil water, speculation has been rife as to how much heat man loses during work and how efficient the human body is as a machine. The relationship between the energy consumption and the output of work has been extensively studied with various methods and machines. Dumas and Boussingalt,[3] by determining that a man used 300 gm. of carbon in climbing Mont Blanc, computed the efficiency of the body as 33 per cent. Frick[4] found that under the best conditions isolated muscle has an efficiency of 25 per cent. Gautier estimated that a working diet is 1,780 calories in excess of a resting diet, and that a man produces 270,000 kilogrammeters of work per day, which is equal to 588 calories. But of the 270,000 kilogrammeters, 100,000 are lost in the different movements of the body and "in the friction of the machine," so that the useful work is 150,000 kilogrammeters, or 352 calories. Therefore, of the 1,780 calories but 352 are transformed into work, giving a net efficiency of 20 per cent. Smith[5] found that, of the total heat incidental to muscular work, only one fifth was used in the production of mechanical work.

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[1] Sedgwick, W. T.: American Achievements and American Failures in Public Health Work, Science, Sept. 17, 1915, p. 361.

[2] The Love of Health, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1116.

[3] Dumas and Boussingalt: *Essai de statique des êtres organisés,* 1884; cited by Amar: Le rendement de la machine humaine, Paris, 1910, p. 21.

[4] *Frick: Arch. f. d. ges. Physiol.* (Pflüger's), 1878, xvi, 58.

There are notable inaccuracies, however, in each of these methods; hence the careful studies and the improved methods used by Benedict and Cathcart[6] in determining the efficiency of the body are especially valuable. These investigators used a bicycle with an accurately calibrated electric brake. The amount of oxygen consumed and the carbon dioxid produced by a man riding this bicycle ergometer was determined with a new form of respiration apparatus. Benedict and Cathcart thus determined the amount of heat that was eliminated per minute and the nature of the materials that were burned in producing this heat. All tests were performed twelve hours after the last meal, so that the food materials used were those stored in the body. By computing the relationship between the heat equivalent of the external muscular work as measured by the ergometer and the total heat output, they found that the net efficiency varied from 9 to 24 per cent., depending on the various speeds and loads that were placed on the bicycle rider. These differences are easily explained on comparison with a steam engine. A certain amount of steam is used in keeping up heat when the engine is not working at all. Slow revolutions and also too rapid revolutions of the fly wheel are less efficient in the production of work. In short, there seems to be a certain rate of speed for each engine at which it is most efficient. So it is with man in work production. Benedict and Cathcart found the average net efficiency of a professional cyclist and of four untrained men to be about 21 per cent. for each person. They found that the output of heat was constant per ten revolutions of the bicycle pedals, but that the increase in effective muscular work was not constant; there was a falling off as the higher rates are reached. The optimum efficiency was at 70 revolutions per minute. One objection to the accuracy of these results is that the cutaneous respiration is not considered, but this is a minor factor and would influence the final result but little.

Chauveau first found that during muscular work there is an excessive combustion of carbohydrates, so that in the subsequent period the catabolism is that of a body deficient in glycogen. Benedict and Cathcart have confirmed this and have demonstrated that the more severe the muscular activity, the heavier the draft on the carbohydrate material in the body. On the cessation of work the so-called "specific working catabolism" disappears, and for a time a much lower portion of carbohydrates is burned for the total energy output than during a usual resting period. Chauveau has also contended that when the supply of glycogen is depleted, fat may be converted into glycogen. According to Chauveau, 30 per cent. more energy per unit of work is liberated than when carbohydrate is burned, since heat which cannot be otherwise utilized is set free during the conversion of fat to glycogen. The transformation of fat into glycogen, however, lacks conclusive proof, and Benedict and Cathcart have not observed the additional heat loss even in work experiments so severe that fatigue resulted.

This question of body efficiency is closely linked with athletic training, a subject about which we are still poorly informed. From this work it would seem that training influences metabolism but little and that diets are not so prominent a factor as we have assumed.

RADIUM AS A FERTILIZER

Discoveries, so long as they are novel, naturally excite expectant optimism as to their application. This is the stage at which honest but undiscriminating enthusiasm and deliberate fakery both flourish. Radium, the possibilities and limitations of which are still undefined, is an instance in point. Time and experience are needed to reduce to rational limits the many claims made for it.

One of the uses suggested for radium is the stimulation of plant growth. Various experimenters have investigated the effect of radium emanation on the growth of plants under laboratory conditions. Gager, Fabre and Stocklasa have each reported stimulation of the growth of plants or the germinating activity of seeds under the influence of an optimum strength of radium, while a greater strength retarded growth.

The results of these laboratory experiments aroused interest in the possibility of using radium as a soil fertilizer under practical agricultural conditions. H. H. Rusby, professor of materia medica in the College of Pharmacy of Columbia University, has made experiments in this direction. He arranged with the Standard Chemical Company of Pittsburgh to use as a fertilizer the powdered residue carnotite ore left after the extraction of all the radium possible. This residue, or ore tailings, is said to contain about 2 or 3 mg. of radium to the ton. It was applied, mixed with fertilizer, on various contiguous plots in proportions of about 25, 50, 100 and 200 pounds to the acre, respectively. Control plots were treated in the same way except that they did not receive the radioactive mixture.

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[5] Smith: Phil. Tr., 1859, cxlix, 681.

[6] Benedict and Cathcart: Muscular Work, Publication 187, Carnegie Institution of Washington.

Rusby's report[1] is published in the house organ of the Standard Chemical Company. It describes in glowing terms quite remarkable results, which, if they could be accepted, *would mark a new era in agriculture*. Nearly all field crops showed an increased yield. Many garden vegetables in treated plots attained a larger size than those in untreated plots. Mere proximity to treated plots seemed to affect favorably the size of vegetables in untreated plots. Rusby also believes that the quality and palatability of vegetables and the size and brilliancy of flowers were improved by the influence of the radium ore mixture.

These results are not confirmed by field tests recently made at the University of Illinois. C. G. Hopkins, professor of agronomy, and W. H. Sachs,[2] chief in agronomy and chemistry at the Agricultural Experiment Station, report field tests of radium fertilizer made at the University of Illinois during 1913 and 1914.

In these tests the radium was used at three rates of application, 0.01 mg., 0.1 mg. and 1 mg. of radium per acre, costing, respectively, $1, $10 and $100 per acre. On one series of plots the radium was applied in the form of radium barium chlorid solution diluted with distilled water. The check plots received the same quantity of distilled water without radium. Another series of plots received solid radium barium sulphates, thoroughly mixed and pulverized with dry soil from the field. The control plot received the same weight of soil without the radium. Hopkins and Sachs explain that the amount of radioactive substance applied in these tests was made small in order to avoid any appreciable effect from the substance other than that due to radioactivity. Some effects might conceivably be obtained from the application of 100 or 200 pounds of mineral salts per acre. In the heaviest applications the amount was less than 5 pounds of total salts per acre.

Corn was grown on the land in 1913 and soy beans in 1914. The work of the two years comprised 144 tests with corn and 240 tests with soy beans.[3] In all these tests the average variation from the controls was so slight and so evenly distributed, for and against, as to compel the conclusion that radium, at any of the rates applied, had produced no effect on the crop yields either the first or the second season.

It will be observed that, whereas the University of Illinois investigators avoided applying any large bulk of salts, Rusby applied his radium in the form of refuse carnotite ore. Of this he used from 25 to 200 pounds per acre, as against the small amount (less than 5 pounds per acre) employed at the University of Illinois. That is, of course, Rusby applied practically from 25 to 200 pounds of the constituents of carnotite (a hydrated vanadate of uranium and potassium) along with the radium. The amount of radium with which he treated the soil per acre, taking his own highest estimate of 3 mg. to the ton of ore tailings, must have been approximately from 0.3 mg. to 0.04 mg. as against the 1 mg., and 0.1 mg. and 0.01 mg. used at the University of Illinois.

A *reductio ad absurdum* of the radium fertilizer theory is given by R. R. Ramsey,[4] associate professor of physics in Indiana University. It is well known that radium is universally distributed, being present in most substances, however, only in minute traces. Taking Rutherford's average value for the amount of radium in the crust of the earth, Ramsey figures that the amount of radium element in the upper 5 inches of an acre of soil is 1 mg. Thus the maximum amount of radium used by Hopkins and Sachs (1 mg.) merely doubled the amount of radium element in the upper soil; the maximum amount used by Rusby increased the amount of radium element by only about one third. The amount of radium emanation which issues from an acre of soil, however, is not confined to the emanation from the radium element in its superficial 5-inch layer; it is from 50 to 100 times as much. Hopkins and Sachs increased the amount of radium emanation in the soil by only about 1 or 2 per cent.; Rusby increased it by only a fractional percentage.

As remarked earlier, experiments indicate that it is possible to increase vegetable growth, under laboratory conditions, by the application of radium. It may be that eventually some means will be found by which radium can be utilized in practical agriculture. At present, however, the best evidence we have does not encourage us to regard this as an immediate possibility.

GAS DIFFUSION IN THE LUNGS

With increasing altitudes the pressure of the air is reduced, and the oxygen tension becomes lower and lower. At a height of about 15,000 feet the barometric pressure is little over half an atmosphere, and the oxygen tension therefore only about 11 per cent. of an atmosphere. The presence of man at any considerable altitude necessitates an adjustment on his part so that the persistent undiminished oxygen requirement of the organism can be satisfied under the enforced changes of atmospheric conditions. Otherwise serious symptoms, which go under the designation of oxygen starvation, may arise. They doubtless play some part in the malady familiarly known as mountain sickness.

One of the adaptations to the barometric conditions prevailing at considerable heights is an increased pulmonary ventilation. There is an augmentation in both depth and frequency of respiration. The increase in pulmonary ventilation diminishes the alveolar carbon dioxid tension, increases the oxygen tension, and improves diffusion. Another important means of rapid adaptation is associated with changes in the circulation. A deficient passage of oxygen from the lungs to the blood may, so far as heart and tissues are concerned, be accommodated for by increasing the rapidity of the blood flow. This is effected by a quickened pulse rate. Such responses are due solely to the low tension of the oxygen, as the recent experiments in the pneumatic cabinet at the Finsen Institute in Copenhagen have demonstrated.[1] Again, there may be an increased quantity of hemoglobin or of red corpuscles. If this response occurs, the necessary amount of oxygen can be transported with a slower rate of circulation, and the arterial oxygen tension can be raised.

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[1] Rusby, H. H.: The Influence of Radioactive Earth on Plant Growth and Crop Production, Radium, January and February, 1915, pp. 68 and 94.

[2] Hopkins, Cyril G., and Sachs, Ward H.: Radium Fertilizer in Field Tests, Science, May 14, 1915, p. 732.

[3] Detailed data are given in Bull. 177, Univ. Ill. Agric. Exper. Station.

[4] Ramsey, R. R.: Radium Fertilizer, Science, Aug. 13, 1915, p. 219.

Some years ago, Haldane and his collaborators arrived at the conclusion that, even when these facilitating adjustments and adaptations are taken into account, as soon as any considerable altitude is reached the necessary supply of oxygen cannot be furnished through the lungs to the blood satisfactorily by the mere process of physical diffusion of the gas. The expedition of the Duc d'Abruzzi in the Himalayas, in which a height of 24,600 feet, corresponding to a barometric pressure of 312 mm., was attained, has been recited as a striking example of the insufficiency of the simple diffusion theory. The problem concerns the forces by which oxygen is transported from the alveolar air into the blood. If the tension of oxygen in the blood is under certain circumstances higher than that of the alveolar air, there can be no doubt that forces other than diffusion must come into play. Haldane and his collaborators have maintained that this is, in fact, the case. The Anglo-American expedition of Douglas, Haldane, Henderson and Schneider to Pike's Peak in 1912[2] furnished further carefully selected observations which have been interpreted in favor of the newer hypothesis that the acclimatization at considerable altitudes is accomplished by an increased arterial oxygen tension due to active secretion of oxygen through the alveolar epithelium.[3]

Dr. Marie Krogh[4] of the University of Copenhagen has taken exception to this widely quoted hypothesis that simple diffusion of gases through the lungs of man is insufficient to explain intakes of oxygen measured under the most adverse conditions, and especially during muscular work at low oxygen pressures. On the contrary, it is maintained, as the result of the newest investigations, that diffusion alone will account for the gas exchange between the alveolar air and blood in all cases which have been examined in sufficient detail, both at low oxygen tension and during the heaviest muscular work. According to Dr. Krogh, during work at low oxygen pressures, it will as a rule be diffusion through the lungs which sets the limit for the intake of oxygen; during work at normal atmospheric pressures, the heart will probably in most cases be the limiting factor.

There are other newer results respecting the combustion processes in the lungs which harmonize well with these conceptions.[5] The discovery of the adequacy of simple physical processes to account for physiologic functions is always a source of satisfaction. The critical studies of Dr. Krogh make it seem unnecessary to assume any cellular activity on the part of the alveolar wall, either in the form of a direct secretion of oxygen, or in the nature of a combustion of intermediate metabolites supposed to increase the mean oxygen tension difference.

THE CAUSE OF RAT-BITE FEVER

It sometimes happens that a carefully formulated description of an unfamiliar group of symptoms serves to arouse sufficient consideration to bring to light other similar or closely related instances. Cases grow in number, and as medical attention is focused on them, a condition which was infrequently recognized or diagnosed may lose its rarity and enter into the group of less exceptional diseases.

With these thoughts in mind we refer to Crohn's recent contribution to the subject of rat-bite fever,[6] known in some of the foreign tongues as Rattenbiss-Krankheit or sokodu. This disease, best known in Japan, where it is recognized by the medical profession, occurs among the classes liable to be bitten by rats. The symptoms are incident to a bite and are followed after a variable incubation period by a single paroxysm or by regularly recurring paroxysms of chills, fever and sweats, lasting a few days, and associated with the occurrence of a local or diffuse bluish-red exanthem. The disease is often characterized by marked nervous symptoms. The course of the malady is signalized by progressive emaciation and weakness; the duration is variable, often very prolonged. Fatal cases are not infrequent.

From a study of about fifty cases reported in the world's literature, some of it dating back several decades, along with personal experience at the Mount Sinai Hospital, New York, Crohn has speculated on the nature of rat-bite fever as a disease. He notes that in the nature of its course it resembles most clearly relapsing fever, the febris recurrens of the Asiatics and Europeans. The diseases resemble each other in the intermittency of the symptoms; the incubation period in both is variable. In its favorable reaction to salvarsan the disease has a common factor with both syphilis and relapsing fever, but more particularly with the former. The finding of a spirochete as the cause of both the latter diseases suggests this as the etiologic factor in this malady. In the prominence of the nervous symptoms and the postfebrile paralyses, rat-bite fever recalls relapsing fever. The one reported postmortem examination in this disease revealed a serous meningitis, with increase of cerebrospinal fluid. The irregular paraplegias and atrophies recall the tabetic lesions of syphilis.

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[1] To What Are Due the Effects of Altitude on Man? editorial, The Journal A. M. A., Sept. 25, 1915, p. 1112.

[2] Anglo-American Expedition to Pike's Peak, editorial, The Journal A. M. A., Aug. 10, 1912, p. 449.

[3] Douglas, Haldane, Henderson and Schneider: Phil. Tr. Roy. Soc., London, B, 1913, p. 203.

[4] Krogh, Marie: The Diffusion of Gases Through the Lungs of Man, Jour. Physiol., 1915, xlix, 271.

[5] Evans, C. L., and Starling, E. H.: Jour. Physiol., 1913, xlvi, 413. Henriques, V.: Biochem. Ztschr., 1913, lvi, 230.

[6] Crohn, B. B.: Rat-Bite Fever, Arch. Int. Med., June, 1915, p. 1014.

Many authors have indicated a belief in one of the species of protozoa as the etiologic factor, but with the exception of the statements of Ogata, whose work has unfortunately not been confirmed, such parasites have not been observed. Many of the symptoms of the malady might, in Crohn's opinion, be the result of a powerful toxin elaborated at the site of the wound and transmitted along the regional nerve paths to the central nervous system, in a manner similar to the propagation of the toxin of tetanus. The point in favor of a spirochete as the causative agent is the similarity of the disease to relapsing fever and syphilis, as regards both the marked nerve symptoms and the apparent curability by salvarsan. In favor of a protozoan cause is the alternation of the paroxysms with afebrile periods, recalling the effects of the malarial plasmodia, though this occurs also in spirochetal diseases.

Now that attention has been turned more prominently to the possibilities involved, new cases will undoubtedly be brought to light in greater number. We shall then perhaps be in a position to ascertain conclusively whether or not the disease is actually caused by living parasites, a conclusion to which much of the evidence presented strongly points.

Current Comment

THE COMPLEMENT-FIXATION REACTION IN TUBERCULOSIS

The presence in the serum of tuberculosis patients of a substance which is capable of binding complement in the presence of suitable antigen has been repeatedly demonstrated. Why this reaction has not come into more general use as an aid in the diagnosis and prognosis of tuberculosis is not apparent. Recent French literature contains observations on the diagnostic importance of this reaction. Besredka and Manoukhine[1] report the results of complement-fixation experiments in guinea-pigs, rabbits and human beings, using as antigen a tuberculin prepared from egg-broth cultures of tubercle bacilli. The test was positive in guinea-pigs after the fourth day of infection, and remained so with fluctuations until shortly before death, when it became negative. In man these observers found the reaction uniformly positive in the early stages of tuberculosis and in a majority of cases in the second stage. They observed partial or negative results in the third stage and regarded a negative reaction in advanced tuberculosis as a sign of approaching death. Debains and Jupille[2] report observations on a series of 600 individuals, including patients in all stages of tuberculosis, patients having various other diseases but no signs of tuberculosis, and apparently normal persons. Some of the latter gave feebly positive reactions. Also patients with a strongly positive Wassermann gave a positive reaction with tuberculous antigen, owing, it is suggested, to lipoids derived from the egg constituents of the medium which react with syphilitic serum in a manner similar to tissue-extract antigen. In advanced cases of pulmonary tuberculosis with cavitation and cachexia feeble or negative reactions were often obtained. In cases of tuberculous pleurisy with effusion negative reactions were frequent. These are explained on the supposition that in advanced tuberculous infections the antibodies in the serum have already been bound or neutralized by substances produced by the large numbers of bacilli present. Experiments with rabbits indicate that the complement-fixing activity runs parallel with the resistance of the animals to infection. If the same conditions obtain in human cases, the test would give valuable information to the clinician regarding the course of the disease. It would seem, from the evidence accumulated by workers in this field, that the complement-fixing reaction can be used with advantage in the diagnosis and prognosis of tuberculosis. The procedure certainly merits trial in hospitals and institutions dealing with tuberculous patients.

HEREDITY IN TWIN BIRTHS

In no field of study is the possession of accurate statistics more necessary than in problems of heredity. An interesting problem concerns the question of the likeness of animals and their offspring with respect to birth as singles, twins, or triplets. Heape,[3] in an analysis of the English statistics available, says that there is reason to believe that twin lambs produce more twins than single lambs, and that the influence of heredity is brought to bear. Rietz and Roberts[4] have taken up the question as determined by the statistics available in this country. In the classes of sheep studied in this instance—registered Shropshire sheep—they found that in general the twin parents give a larger percentage of twins among offsprings than do parents born as singles. They call attention to the fact that as it requires large numbers to establish the significance of the difference found, and it would not be surprising if within a flock of fair size—one hundred—one may in some cases get even a larger percentage of twins from single parents than from twin parents; but such fluctuations would not occur in the large majority of cases. What the significance of these results are for the human being can be determined only by a similar study of heredity in twin births.

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[1] Besredka and Manoukhine: Ann. de l'Inst. Pasteur, 1914 xxviii, 569; Compt. rend. Soc. de biol., 1914, lxxvi, 197.

[2] Debains and Jupille: Compt. rend. Soc. de biol., 1914, lxxvi, 199.

[3] Heape: Jour. Roy. Agr. Soc., England, 1899, x, 236.

[4] Rietz, H. L., and Roberts, E.: Degree of Resemblance of Parents and Offspring with Respect to Birth as Twins for Registered Shropshire Sheep, Jour. Agric. Research, 1915, iv, 479.

EDIBLE SNAILS

To most Americans the idea of using snails in the diet will not awaken gastronomic enthusiasm; but there are people in various parts of the world to whom the suggestion of the use of other mollusks, such as oysters and clams, would be repugnant. It is not necessary to go back to the days of the elder Pliny for evidence that edible snails have had a place on the menus of many countries. It is stated that during our own oyster season, from September to April, more than 200 million snails are disposed of in Paris alone. The daily consumption of "escargots" in the French capital has been estimated at 50 tons when trade is at its best. In the belief that the American people can be educated to see the true worth of the edible snail, which might be grown with profit in the United States, a government expert has collected some facts bearing on their use.[1] The European war has added a further interest to the possibility of snail culture. Comparatively few Americans have ever tasted snails, know of their preparation as food, or even consider them a fit article of diet. Among the foreigners in our population, snails have a limited sale. Those sold in the fish markets of our larger cities have practically all been imported from France. Abroad, snails are by no means regarded in any sense as a national dish. They are included in the dietary much as is the oyster in this country, as a table luxury or delicacy. In respect to composition, the two groups of mollusks furnish about the same yield of nutrients. In Europe, snails are raised commercially under an intensive system of culture in many places in snaileries. Rust[1] believes that although snail culture may not be very profitable in Europe, where economic conditions are different, in that the food for the animals must be grown and supplied to them regularly and everything done with much labor on restricted areas of land, in the United States snail farming might, with judicious publicity, and in time, become profitable. Whether or not it is advantageous, from the standpoint of nutrition, to attempt to introduce a new food to the American table is a question of individual preference. Almost every one, Rust writes, who has ever eaten well-prepared snails, admits their gastronomic worth, from the points both of nutritive value and of flavor, and there are many states where they could be grown and kept fresh until used, and where they would prove a very welcome addition to the somewhat limited menu of the locality. In the Mississippi Valley, for instance, where conditions for their cultivation are almost ideal, they could be grown at practically no cost (either in money, time or labor), and might be used to a great extent in place of oysters, which they greatly resemble in flavor when properly prepared. Such a practice would be advantageous, for the snail is possibly preferable as an article of human consumption. It is cleaner, feeding daintily, as it does, only on the cleanest of vegetable tissues, while oysters, not being able to move about in search of food, must take what comes to them in the water, are sometimes fattened in water impregnated with bacteria-laden sewage, and thus, occasionally, act as carriers of typhoid and other diseases. At any rate, we can be prepared to receive the suggestion of the addition of snails to the American menu without the revulsion of feeling which it awakens in many at present.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

CALIFORNIA

Fresno Gets State Society Meeting.—The Council has decided that the 1916 meeting of the Medical Society of the State of California is to be held in Fresno in April.

Personal.—Fire in Caruthers, September 10, destroyed the office of Dr. George A. Meracle.——Dr. Lyle G. McNeile has been appointed deputy health commissioner of Los Angeles.

State Board Changes.—On September 2 Governor Johnson appointed Dr. Wilbur A. Sawyer, Berkeley, a member of the State Board of Health to succeed Dr. Donald H. Currie, Sacramento, the secretary of the board, resigned, and Dr. Robert A. Peers, Colfax, to succeed Dr. James H. Parkinson, Sacramento, term expired.——At a meeting of the Board, September 4, Dr. Sawyer was elected secretary.

State University Happenings.—Dr. James Craig Neel, San Francisco, has been appointed instructor in obstetrics and gynecology (on an academic basis); Dr. William Boericke has been appointed clinical professor of homeopathic materia medica, and Dr. Sanford B. Hooker and Carl L. A. Schmidt have been appointed research assistants in pathology in the University of California to undertake researches as to typhoid fever and in problems of biologic specificity, provided for by the Edith J. Claypole Memorial Research fund in pathology and George Williams Hooper Foundation for Medical Research.

Ordinance Regarding Diphtheria Carriers.—Among the cities in California which have ordinances providing for the isolation of diphtheria carriers are San Francisco and Berkeley, in both of which places opposition has arisen to the enforcement of the ordinance. In San Francisco an attempt was made in the Board of Supervisors to repeal the ordinance, and in Berkeley Assemblyman George Gelder has threatened to appeal to the courts to prevent the enforcement of the isolation ordinance. A number of his children had been affected by the law, being excluded from the schools on account of the discovery by the school inspectors that they were diphtheria carriers. Assemblyman Gelder, it is said, has been opposed to a number of health regulations, among them the laws in regard to vaccination against smallpox. Dr. George E. Ebright, San Francisco, president of the State Board of Health, takes the stand that the repeal of the isolation ordinances would be a deadly menace to the health of the community. He says that the carriers in San Francisco quarantined at the Isolation Hospital are comfortable and are treated with the greatest care. The State Board has found little difficulty in controlling diphtheria in other parts of the state, but little opposition having arisen on account of attempts at regulation.

ILLINOIS

Personal.—Dr. Frank A. Stubblefield, medical director of the Alton State Hospital, who has been ill in St. Joseph's Hospital, Alton, is reported to be improving.

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[1] Rust, E. W.: Edible Snails, Yearbook U. S. Dept. Agric. for 1914, p. 491.

Foot and Mouth Disease.—Two herds of Guernseys and Holsteins, 204 in number, belonging to Arthur Meeker, found to be infected with foot and mouth disease, have been slaughtered.——Of the Guernsey herd of Mrs. Durand, two have died from secondary infection and a stricter quarantine has been put into effect at Crab Tree Farm.——The animal health commissioner of Iowa has notified the assistant state veterinarian that there must be no exchange of stock of any kind between Illinois and Iowa, owing to the outbreak of foot and mouth disease in Illinois.

Chicago

Diphtheria Carriers.—Almost 500 diphtheria carriers have been discovered among the schoolchildren of Chicago since the opening of school on September 7, according to the records of the department of health.

New Armory Dedicated.—Field Hospital Companies Nos. 1 and 2, Ill. N. G., dedicated their new armory in Chicago, October 1. Major William J. Swift, M. C., Ill. N. G., commanding Field Hospital No. 1, presided as toastmaster.

Personal.—Dr. John A. W. Fernow was painfully injured in a collision between street cars, October 3, but rendered first aid to the others who were injured.——Dr. Anthony Balcerzak has been elected chief medical examiner of the Polish National Alliance.

KANSAS

Personal.—Dr. Joseph M. McKamey, Kingman, sustained a skull fracture in a collision between his motor car and a train, September 12.

Baby Week at Topeka.—During baby week, held at Topeka, October 5-8, under the auspices of the State Board of Health Division of Child Welfare, Dr. Lydia Allen DeVilbiss, director, and Dr. Harold B. Wood, 159 babies were registered for examinations. Picture films were lent by the National Association of Tuberculosis, Cincinnati Department of Health, Kansas State Board of Health and the University of Kansas. There was an exhibit of A. M. A. placards (cartoons), other placards, and sketches and water color designs by Dr. Wood. There were also displays of baby clothing and furniture and a pure milk exhibit. Programs were given afternoons and evenings.

KENTUCKY

Personal.—Dr. James Bruce has been reappointed house physician and chief of interns, at the Louisville City Hospital, succeeding Dr. Thomas L. Harris, resigned.——Dr. John H. Taylor, Providence, was operated on September 13, in St. Mary's Hospital, Rochester, Minn. The gallbladder and appendix were removed.

Hospital Notes.—A contract for a new tuberculosis hospital at Henderson was awarded September 15.——A hospital is to be built at once in connection with the Stuart Robinson College, Mission School, Blackey, near Whitesburg. About $10,000 is to be expended for hospital and equipment.——Dr. Thomas O. Helm, Bowling Green, has disposed of his lease and interest in St. Joseph's Hospital to Drs. Morton M. and Robert C. Moss.

New State Officers.—The sixty-fifth annual meeting of the Kentucky State Medical Association was held in Louisville, September 21 to 24, under the presidency of Dr. John J. Moren, Louisville, who at the first session yielded the chair to the president-elect, Dr. James W. Kincaid, Catlettsburg. Hopkinsville was selected as the next place of meeting and the following officers were elected: president-elect, Dr. Ap Morgan Vance, Louisville; vice-presidents, Drs. Myrvin E. Hoge, Quicksand; Amos M. Davis, Denton, and James B. Mason, London; secretary, Dr. Arthur T. McCormack, Bowling Green (reelected); delegates to the American Medical Association, Drs. Carl Lewis Wheeler. Lexington; and W. W. Richmond, Prestonsburg; councilor for the Fifth District, Dr. Charles W. Hibbitt, Louisville; nomination for members of the State Board of Health, Drs. Charles Z. Aud, Cecilia; Daniel M. Griffith, Owensboro; and Robert C. McChord, Lebanon. Dr. Edwin A. Stevens, Mayfield, was selected as orator in medicine; and Dr. William L. Gambill, Jenkins, as orator in surgery.

MASSACHUSETTS

Changes in Harvard Faculty.—The Harvard corporation has made the following appointments for the year opening September 27: Dr. John L. Morse, formerly associate professor of pediatrics, has been made full professor.——Dr. Frederick T. Lewis, formerly assistant professor of embryology, has been appointed associate professor.——Dr. John Warren, assistant professor of anatomy, has been made associate professor.——Dr. John L. Bremer, assistant professor of histology, has been made associate professor.——Dr. Francis W. Peabody has been appointed assistant professor of medicine and Dr. Herbert S. Langfeld, assistant professor of psychology.

Personal.—Dr. Fred P. Moore, Foxboro, has been appointed health supervisor of schools of Des Moines, Iowa.——Dr. Clarence H. Leland, Lowell, was severely cut and bruised by the overturning of his automobile in Lexington, September 13.——Drs. Roger I. S. Lee and Charles A. Porter, Boston, members of the Harvard Medical unit, returned from abroad, arriving in New York September 12.——Dr. William H. Devine, Boston, has been appointed director of school physicians by the Boston School Board.——Dr. Henry Colt, Pittsfield, has been appointed medical examiner for Berkshire County.——Dr. Milton J. Rosenau has resigned as a member of the Public Health Council of Boston and has been succeeded by John T. Wheelright.——Dr. Thomas F. Harrington, Boston, deputy commissioner of labor and industry, has been seriously ill at his summer home in Lynn with ptomain poisoning complicated with appendicitis and phlebitis.——Dr. Moses G. Parker, Lowell, was reelected president of the Parker Historical and Gynecological Society at the fifth annual reunion held in Lexington.——Dr. Lemuel F. Noble, Boston, has returned after several months' war service in Europe.——Dr. Francis D. Donoghue, Boston, arrived in New York from Europe, September 2.

MARYLAND

Meeting of Faculty.—The semi-annual meeting of the Medical and Chirurgical Faculty of Maryland will be held in Westminster, October 28.

University of Maryland Medical School Reopens.—The formal opening exercises of this institution were held October 6. Dr. Arthur M. Shipley, acting dean, presided, and the speakers were Dr. Randolph Winslow, of the University of Maryland, Dr. Harry Friedenwald, of the College of Physicians and Surgeons, and Dr. Ridgely B. Warfield, of the old Baltimore Medical College.

Protest Against Dr. Jones' Removal.—The Baltimore City Medical Society held a special meeting on October 1, adopting resolutions indorsing warmly the services rendered by Dr. C. Hampson Jones, as assistant health commissioner and protesting against his removal. The meeting was marked by intense feeling. The society has appealed to Dr. John D. Blake, the new commissioner of health, to use his prerogative by reappointing Dr. Jones.

Mosquito War Near End.—The first move to end the mosquito work has been completed and fifty inspectors have been laid off. The force will probably be broken up October 15. Sanitary Engineer W. D. Wrightson of the U. S. Public Health Service and his four inspectors will remain on duty until that date. Maj.-Gen. Wm. C. Gorgas, Surgeon-General of the U. S. Army and Surgeon-General Rupert Blue, of the U. S. Public Health Service, will make a final inspection of the work before that date.

Personal.—Dr. William H. Welch of Baltimore, a member of the Rockefeller Medical Mission, who is on his way to China, has reached Tokyo, Japan, where he with the other members of the mission were entertained by the Japanese premier.——Dr. John D. Blake, Baltimore, has been appointed commissioner of health by the mayor, to succeed Dr. Nathan R. Gorter. Dr. Gorter has been appointed a member of the State Board of Health by Governor Goldsborough. ——Dr. Robert H. Crawford, Baltimore, has returned after several months' duty with the Red Cross unit in Silesia.

MISSOURI

Cancer in Missouri.—The department of preventive medicine of the University of Missouri, as a part of the campaign against cancer in that state, has published in the University *Bulletin* a special article on the early diagnosis of cancer, by a member of the faculty of the university. The purpose of the bulletin is to call the attention of the laity to the general subject of cancer and especially to the importance of regarding the earliest symptoms. The bulletin especially warns the people against quacks and bogus testimonials regarding the cure of cancer.

St. Louis

Hospital Unit Not Needed.—The St. Louis University hospital unit, recently organized for service abroad, has been notified by the director-general of the royal army medical staff that for the present he is unable to use any more American hospital units.

Memorial Resolutions.—At a joint meeting held by the board of trustees and staff of the St. Louis Eye, Ear, Nose and Throat Infirmary, September 22, resolutions were adopted setting forth the high and honorable standing of Dr. Horatio N. Spencer and expressing deep sorrow at his death.

Personal.—Dr. Malvern B. Clopton sailed from New York September 25 for work with the American ambulance in Paris.——Dr. Guthrie McConnell has been placed in charge of the pathologic and bacteriologic laboratory of the Waterloo (Iowa) Medical Society.——Dr. Frederick Hagler has returned after six months' work in military hospitals in Serbia.——Dr. Milton Schaic has resigned as medical director of the Jewish Home for Chronic Invalids and Consumptives of St. Louis.——Dr. Ralph L. Thompson has returned from service in the British War Hospital in France.

NEVADA

To Muzzle Dogs.—The State Board of Health and the Hygienic Laboratory, September 18, issued a bulletin calling attention to the necessity for muzzling all dogs, on account of the prevalence of rabies, chiefly among coyotes. The disease existed in many parts of the state, it is said.

State Sanitary Survey.—Surgeon Carroll Fox, U. S. P. H. S., has completed a sanitary survey of the state in company with Dr. Simeon L. Lee of the State Board of Health. He believes that the State Board of Health should be completely reorganized; that the State Hygienic Laboratory, and Pure Food and Drug Commission should be placed under the control of the State Board of Health instead of the State University, and that a state sanitary engineer should be appointed. Dr. Fox, in his report, called attention to the fact that Nevada is the most poorly equipped state in the Union in the matter of its health service; that the State Board of Health was allowed an appropriation of only $6,500 while the Fish and Game Commission was allowed $8,000, and furthermore, that the latter commission expended last year $10,000 above this appropriation and the succeeding legislature passed a bill approving the extra expenditure. In the belief of Dr. Fox, at least $14,500 should be appropriated for the State Board of Health.

NEW YORK

Personal.—Dr. Smith Baker, for more than forty years a practitioner of Whitestown and Utica, announced his retirement from practice, September 25.——Dr. Alexander C. Calisch, Oswego, has been appointed a member of the Board of Civil Service Commissioners.

Psychopathic Ward Needed.—Drs. Walter S. Goodale and B. Ross Nairn, Buffalo, appeared before the aldermanic finance committee, September 23, to endeavor to secure an appropriation of $2,000 for the establishment of a psychopathic ward for suspected insane and alcoholic cases at the Buffalo Municipal Hospital.

New York City

Crile Speaks Before Academy.—At the stated meeting of the New York Academy of Medicine, October 7, Dr. George W. Crile, Cleveland, delivered the Wesley M. Carpenter lecture on "Kinetic Drive—Its Phenomena and Its Control."

Personal.—Dr. Louis T. Klinker has suffered a mental breakdown and has been taken to Bellevue Hospital for observation.——Dr. Abraham L. Wolbarst began a series of public genito-urinary clinics at the West Side German Dispensary and Hospital, at 8:30 p. m. October 7. He also began a similar series of clinics on October 5, at 3 p. m. at Beth Israel Hospital and Dispensary.——Dr. Mary M. Crawford, Brooklyn, who has been serving for about a year in the American Hospital just outside of Paris, has returned to this country.——Dr. J. W. Brown, Dr. and Mrs. H. Holbrook Curtis and Dr. John E. Jones have sailed for Europe.

Columbia University Opens.—President Nicholas Murray Butler opened Columbia University's one hundred and sixty-second year on September 29 and in his address gave the assurance that within five years the project launched by the University and the Presbyterian Hospital for a great medical center will have been begun. He said that the $7,000,000 which the University must raise as its share would be forthcoming and added that plans had been adopted looking to the accomplishment of the task. Dr. Francis Carter Wood, director of the Crocker Cancer Research Fund, delivered the opening address to the students of the medical school, taking as his subject "Magic and Medicine." The point which he particularly emphasized was that the exploitation of radium cures of cancer by the lay press had been and was influencing many cancer patients to defer a resort to surgery, whereas in truth radium would cure but a small percentage of cancers and would do nothing which could not be done by surgery.

NORTH CAROLINA

Antityphoid Inoculation.—The State Board of Health reports that 47,037 patients were immunized against typhoid fever during the two first campaigns conducted by the State Board of Health.

Hospital Notes.—The Western North Carolina Methodist Conference, at its last meeting, advocated the establishment of a hospital in Salisbury.——The Tranquil Park Company has been organized at Charlotte to establish a hospital and sanatorium for the treatment of noncontagious medical diseases. Dr. John Q. Myers, Charlotte, is president and physician in charge of the institution; and Dr. John P. Munroe is vice president.——The Bloomsbury Sanatorium is under course of construction and will be ready to receive patients by the first of January. It is located on a site of 15 acres of rising ground near Bloomsbury.

OHIO

Lumber Magnate Donates Site for Hospital.—Peter Kuntz, Middletown, has purchased forty acres of land west of Dayton, which he has donated to the Sisters of the Poor of St. Francis, for a hospital. About $500,000 will be expended for the institution.

License Restored.—At its meeting July 6, the Ohio State Medical Board voted to restore the license of Dr. J. C. Ludwig of Cincinnati, which was revoked in 1907, for reasons involving moral turpitude. Many prominent citizens of Cincinnati endorsed his application for restoration. He is 77 years of age.

Not to Use Title of "Doctor" or "M.D."—The Ohio Board has adopted a regulation that limited license certificates will not confer the right to use the title "Doctor," "Dr.," "M.D.," "Physician" or "Surgeon." The regulation provides, however, that licensed practitioners in the limited branches on their cards, office signs, letter heads or elsewhere, may use the name of the limited branch specified in their certificates and may properly sign themselves as indicated.

Registration of Limited Practitioners.—In accordance with the Platt-Ellis law which gives the State Medical Board of Ohio the duty of registering practitioners of the various medical cults, blanks have been sent out to all such practitioners in order to secure a complete record. The cults mentioned in the law are chiropractic, naprapathy, spondylotherapy, neuropathy, mechanotherapy, electrotherapy, hydrotherapy, suggestive-therapy, psychotherapy, magnetic healing, massage, Swedish movement, chiropody and optometry.

Infantile Paralysis.—September 25, it was reported from Cleveland, that sixty-five homes had been quarantined by the City Health Department on account of infantile paralysis in the section of the city known as Willoughby. The death rate had been 6 per cent., which was 2 or 3 per cent. higher than the normal mortality rate. Health Commissioner Ford issued instructions as to personal prophylaxis. At Canton, September 23, the Board of Health ordered the quarantine of eight homes in which cases of infantile paralysis had occurred since September 1. In the previous week no new cases of the disease had developed. The order to quarantine these homes came from the State Board of Health.

Personal.—Dr. Oscar Theodore Schultz, formerly assistant professor of pathology in Western Reserve University, Cleveland, has been appointed professor of pathology and bacteriology in the College of Medicine of the University of Nebraska, Lincoln and Omaha.——Dr. David Marine, Cleveland, has returned from Compiegne, France.——Dr. Harry H. Snively, Columbus, in charge of the American Red Cross Hospital at Kiev, Russia, is said to have been made a general officer by the Russian government.——Dr. John F. Beachler, Columbus, fell down stairs, September 10, and sustained severe injuries.——Rev. Michael V. Halter, formerly a physician of Akron, has been appointed temporary pastor of Holy Trinity Church, Avon.——Dr. Howard W. Arndt, Lore City, was seriously injured in a collision between his automobile and a street car at Lore City and is under treatment in a Cambridge hospital.——Dr. Sylvester R. Best, Centerburg, has been appointed chief statistician for the Department of Vital Statistics.

PENNSYLVANIA

Hospital Cornerstone Laid.—The cornerstone of the Philadelphia Memorial Hospital, the gift of 11,200 Philadelphia Free Masons, was laid, September 29, with impressive ceremonies, on a part of the large tract dedicated to the care of dependent Masons, at Elizabethtown, Pa.

Changes in Pittsburgh University Faculty.—Dr. John Jenkins Buchanan, for fourteen years professor of surgery in the University, has resigned as an active teacher and has been elected professor emeritus.——Dr. Robert Talbott Miller, for the past five years a member of the surgical faculty of the School of Medicine, and lately appointed associate professor of surgery, has been appointed full professor in charge of that department.

Infantile Paralysis.—The outbreak of infantile paralysis at Erie and in that vicinity has about subsided and Drs. Fox and Rivas, sent by the State Board of Health to take charge of the situation, left Erie September 24. It was believed that very few additional cases would occur if the people took the proper hygienic precautions about which they were carefully instructed by the two experts. No new cases had been reported since September 15. Altogether there have been fifty-nine cases in the city and fifteen in the county outside, since January, 1915.

Philadelphia

Reception of Medical Club.—The Medical Club of Philadelphia will give a reception, October 15, in honor of Surgeon General Rupert Blue, United States Public Health Service, and Rear Admiral William C. Braisted, Surgeon General, United States Navy.

New Scholarships at Women's School.—Through friends of the Women's Medical College, two new scholarships are this year available for women students. The scholarships carry with them the sums of $225 and $250 a year, respectively. The faculty of the college will choose recipients from the list of applicants.

New Law on Communicable Diseases.—The Department of Public Health and Charities has issued a pamphlet edition of "An Act to safeguard human life and health throughout the commonwealth, by providing for the reporting, quarantining, and control of certain communicable diseases, and for the prevention of infection therefrom, and prescribing penalties for violations of the act," approved May 28, 1915.

Personal.—Dr. John A. Kolmer has been appointed assistant professor of experimental pathology in the University of Pennsylvania.——Dr. L. D. Englerth has been appointed chief resident physician to the Frankford Hospital.——Dr. E. E. Montgomery was operated on for hernia in Jefferson Hospital, recently.——Dr. William C. Hollopeter, for fifteen years professor of pediatrics at the Medico-Chirurgical College has resigned and has been succeeded by Dr. James H. McKee.——Dr. William B. Swartley is on his way to join the staff of the American Ambulance Hospital in France, where he will remain about three months.——Dr. Charles K. Mills, having resigned his chair in the Medical School of the University of Pennsylvania, will devote attention to postgraduate teaching, research work and private practice.

RHODE ISLAND

State Society Holds Fall Meeting.—The Rhode Island Medical Society held its fall meeting at St. Joseph's Hospital, Providence, September 2, after dinner and sports at Hillsgrove.

Infantile Paralysis.—The occurrence of fourteen cases of infantile paralysis at West Warwick resulted in an investigation by members of the State Board of Health. It was found that there was no association of the cases, except that in two instances there were two patients in the same family. The disease could not be traced to any definite focus. None of the patients was over 7 years old.

Personal.—Dr. Olin S. Pettingill, assistant superintendent of the Rhode Island State Sanatorium, has been offered the position of superintendent of the Western Maine Sanatorium, Hebron.——Dr. Elisha A. Cohoon of the staff of the Rhode Island State Hospital has been appointed administrative officer of the psychopathic department of the Boston State Hospital and pathologist for the Massachusetts Board of Insanity.

TEXAS

For the Eradication of Infections.—A meeting of the State Board of Health and representatives of the federal government, representatives of the state agricultural and mechanical college and the live stock sanitary commission of Texas was called October 5 for the purpose of formulating a plan for the eradication of Texas fever, charbon, hog cholera, etc.

Personal.—Drs. Claude O. Harper, Thomas M. Jeter, Samuel A. Lundy, and Lyman A. Barber have accepted appointments as members of the board of health of Fort Worth.——Dr. Jake T. Wilhite has retired from the staff of the State Hospital, Austin, to accept the position of physician-in-charge of the Pasteur Institute.——Dr. Raleigh L. Davis has been appointed second assistant physician of the State Hospital, Austin; Dr. T. N. Miller, third assistant; and Dr. Wooten D. Lightfoot, fourth assistant physician.——Dr. Frank E. Piner, formerly city health officer of Denton, returned from war service in England, September 24.

The Situation at Galveston.—Mr. Charles Saville, director of sanitation of the city of Dallas, has made a report on the sanitary conditions at Galveston following the recent storm. He recommends that the water for drinking and cooking purposes be boiled; that systematic bacteriologic analyses of the city water be taken daily; that all water mains and dead-ends be flushed out; that the use of water from private wells and underground systems be interdicted, and that a sterilizing apparatus be installed at the water pumping station for the water supply of the city. He also recommends the construction of dry closets; the systematic flushing and cleaning of sewers and catch basins; the keeping of garbage and refuse in fly-tight receptacles; the incineration of all garbage and refuse; the removal of sand from the city streets and the establishment of a high temperature refuse incinerator for permanent use.

WISCONSIN

Free Silver Nitrate.—The State Board of Health has notified the local boards of health that a 1 per cent. solution of silver nitrate will be furnished free of charge to all physicians and midwives in the state.

Personal.—Dr. Argo M. Foster, Racine, who was injured in a collision between his automobile and an electric car in August, has been obliged to undergo an operation on the skull and is under treatment in a Chicago hospital and is said to be doing well.

Legislation Helps Sanatoriums.—Five new county tuberculosis sanatoriums will be erected in Wisconsin this fall, in Marathon, Grant, Jefferson, Dunn and Fond du Lac counties. In four of these counties the county board members are already at work on the proposition and in the fifth county, the county medical society and private citizens have taken the initiative.

Madison Does Not Want Polluted Drinking Water.—Medical men of Madison, at a meeting September 9, passed resolutions based on the proposition to exchange the artesian water supply for Madison for surface water from Lake Mandota; and setting forth that the present supply is pure, that its cost is moderate and that there is an abundant supply. Furthermore, that Lake Mandota is polluted by the sewerage of the State Hospital for the Insane and the residences around the lake. They, as physicians of Madison and the vicinity, and members of the Dane County Medical Society, believe that the change proposed is perilous, and call on the city council to retain the present source of water supply, to establish a modern and adequate plant in charge of a competent sanitary engineer.

CANADA

Personal.—Dr. William Henderson, Sarnia, Ont., who has a commission with the Royal Army Medical Corps in England, has been appointed physician-in-chief of a hospital ship for the Dardanelles. The ship carries six physicians, twelve nurses and has 450 beds.——Prof. Thomas G. Brodie, F.R.G.S., and Prof. John J. MacKenzie, B.A., M.D., will shortly return from England to resume their duties at the University of Toronto. Both professors went over as supernumeraries with the University of Toronto Base Hospital.——Dr. Fortunat Lachance, Winnipeg, mayor of St. Boniface, Man., will shortly leave for the front in charge of one of the departments of the military hospital being equipped by Laval University, Montreal. Dr. Lachance will have the rank of lieutenant-colonel.——Col. John T. Fotheringham, Toronto, chief medical officer of the Second Canadian Overseas Force, writing to Dr. Goldwin W. Howland, Toronto, says that Lord Kitchener and the inspector-general of the War Office have stated that the second force now in France both in training and physical fitness was the finest body of men that had left England for France, a place of honor up to this time held by a division from Ulster.——Dr. Robert G. Brett, Banff, is to be appointed the next lieutenant-governor of the province of Alberta.

Ontario Medical Commission Appointed.—The Ontario government has at last appointed its long-promised commission on the subject of medical education and practice in that province. The commissioner is the Hon. Mr. Justice Hodgins of the supreme court of Ontario. Wide powers are given to the commissioner as seen in the instructions issued with the appointment. To inquire into and report on all or any matters relating to education for the practice of medicine in or affecting the province of Ontario; the construction, powers, duties and regulations of any body corporate or incorporated and of any faculty or department thereof having any relation to medicine, the exercise of the same and the revenues and expenditures thereof; the situation, legal or otherwise, of such bodies in regard to each other or to the province; the establishment, creation, control and regulation of any new body intended to have relation to medicine; the existing or possible methods of examining, licensing or otherwise authorizing the carrying on by individuals of the practice of any methods having any relation to medicine and the standards prescribed and followed or proper to be established and followed; the present positions, status and practice of osteopaths, dentists, nurses, opticians, optometrists, chiropractors, Christian Scientists or others practicing or professing medicine; the existing laws of Ontario in relation of any of the foregoing and their practical operation; any matter arising out of the foregoing which it is necessary to investigate with a view of the above inquiries.

Hospital News.—In his public address in Toronto on September 27 the prime minister of Canada, Sir Robert Borden, referred to the work of the Canadian hospitals abroad. Canada has established in Great Britain, France and at the Dardanelles no less than sixteen hospitals. These are for all the forces of the British empire and not for Canadians alone. Eight of them are located in Great Britain; five are in France; three are at the Dardanelles. On the staffs of those hospitals are 2,400 Canadians, and 525 trained nurses. Sir Robert stated that he had visited nearly fifty hospitals while abroad and he considered that none were better equipped, better organized, or in which the wounded received better care and attention than the hospitals which have been organized by the people of Canada.——At Hamilton, Ont., the cornerstone of a new hospital was laid on September 24 by the lieutenant governor of the province, Sir John Hendrie. The new institution will be known as Mt. Hamilton Hospital. It will be the center of a group which it is intended to establish there. The hospital is maintained in its entirety by the civic administration. Dr. Charles O'Reilly, Toronto, formerly superintendent of the Toronto General Hospital, was present and delivered an address. Dr. O'Reilly went from the Hamilton General Hospital many years ago to the Toronto General as superintendent.——The Massey-Harris employees, Toronto, are to establish in England a convalescent home for wounded Canadian soldiers. The yearly maintenance will be about $50,000, and the original cost of equipment about $25,000. Canadian doctors and nurses will be employed.

GENERAL

Ohio Valley Physicians' Meeting.—The seventeenth annual meeting of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. E. Otis Smith, Cincinnati.

Colored Physicians Hold Meeting.—The annual meeting of the National Medical Association was held in Chicago, September 1 to 3. Dr. Ulysses G. Dailey, Chicago, was elected president; Dr. Walter G. Alexander, Orange, N. J., secretary; and J. R. Levy, Winston-Salem, N. C., treasurer. The association will hold its next meeting in Kansas City, Kan.

Roentgenologists Elect Officers.—At the annual meeting of the American Roentgen Ray Society held in Atlantic City, September 23 to 25, Dr. Augustus W. Crane, Kalamazoo, Mich., was elected president; Dr. William A. Evans, Detroit, treasurer, and Dr. F. W. Manges, Philadelphia, was reelected secretary. Cincinnati was selected as the place of meeting for next year.

Clinical Congress of Surgeons.—The sixth annual session of the Clinical Congress of Surgeons of North America will be held in Boston during the week of October 25. The mornings and afternoons will be devoted to clinics and four evening meetings will be held. On October 25, the president-elect, Dr. Charles H. Mayo, Rochester, Minn., will deliver the annual address.

Missouri Valley Physicians Elect New Officers.—At the annual meeting of the Missouri Valley Medical Association held in Des Moines, September 21 to 23, under the presidency of Dr. Granville Ryan, Des Moines, the following officers were elected: president, Dr. John P. Lord, Omaha; vice presidents, Drs. Charles G. Geiger, St. Joseph, Mo.; and Hobart A. Weston, Des Moines, Iowa; secretary, Dr. Charles Wood Fassett, Kansas City, Mo. (reelected); and treasurer, Dr. Oliver C. Gebhardt, St. Joseph, Mo.

Rockefeller Foundation Expenses for 1914.—The financial transactions of the Rockefeller Foundation show that the administration expenses for the year 1914 were $13,731.60; appropriations for the International Health Commission, $133,237.06, of which $36,651.96 went to the China Medical Commission and $10,000 was appropriated for research work on governmental problems; for war relief there was expended $994,613.06 and for purchase of the Bird Refuge in Louisiana, $224,886.95. The total expenses for the year were $1,421,031.81.

Electro-Therapeutists Hold Meeting.—At the annual meeting of the American Electro-Therapeutic Association held in Atlantic City, September 14 to 16, under the presidency of Dr. John W. Torbett, Marlin, Tex., the following officers were elected: president, Dr. Jefferson D. Gibson, Denver; vice presidents, Drs. J. Willard Travell, New York; Frank B. Granger, Boston; William L. Clark, Philadelphia; Sidney A. Twinch, Newark, N. J.; and William Martin, Atlantic City; secretary, Dr. Byron Sprague Price, New York; treasurer, Dr. Emil Heuel, New York (reelected), and registrar, Dr. Frederick M. Law, New York (reelected).

Conference on Social Hygiene.—The First Central States Social Hygiene Association will be held at the Congress Hotel, Chicago, October 25 and 26, under the auspices of the Central States Division of the American Social Hygiene Association. The first session of the conference will be held in the evening of October 25, and will be given over to discussions of general features of the social hygiene movement. In the forenoon of the following day, the moral and educational features of the social hygiene movement will be taken up; in the afternoon, the medical and public health aspects will be treated; the evening session will be given over to discussions of the legal and administrative phases.

Meeting of National Safety Council.—The fourth annual safety congress of the National Safety Council will be held at the Bellevue-Stratford, Philadelphia, October 19 to 21. At the general session on October 19 the subjects considered will include: The development of the safety idea; safety as an indispensable part of an efficient manufacturing organization; the safety idea as related to the credit of a business organization; vital importance of the visiting nurse in industrial work; and the standardization of safeguards. The other meetings of the council will be sectional meetings, to be composed of groups of persons interested in accident prevention problems as they affect special industries and will consist of experience meetings and discussions of various points involved. The final meeting on October 21 will be a general meeting of all sections to discuss the question "How to Educate the Workman."

New England Tuberculosis Conference.—The second New England Tuberculosis Conference will be held under the auspices of the National Association for the Study and Prevention of Tuberculosis, October 22 and 23, under the presidency of Dr. Stephen J. Maher, New Haven, Conn. The first session will be held at the Hotel Kimball, Springfield, Mass., and will take up methods of antituberculosis work. At a second session held on the ninth floor of the Forbes and Wallace department store on Kinshon Street, sales methods of the Red Cross seal will be described. The third session will be held in the First Congregational Church at which the topic for discussion will be "Industry and Tuberculosis." The fourth and fifth sessions will be held at the Westfield Sanatorium and at these sessions programs of antituberculosis work and the diagnosis of incipient cases of pulmonary tuberculosis will be considered.

Candidates for Army Medical Corps.—The following candidates, who have passed the preliminary examination for appointment in the Medical Corps of the Army, have been invited to attend the 1915-1916 session of the Army Medical

School, Washington, D. C.: Arden Freer, Bellevue Hospital, New York City; John S. Caul, Laceyville, Pa.; Charles C. Hutter, 245 West North Avenue, Chicago, Ill.; Harvard C. Moore, 623-624 Medical Building, Portland, Ore.; William F. Rice, Government Hospital for the Insane, Washington, D. C.; Charles G. Sinclair, Providence Hospital, Washington, D. C.; Edward A. Noyes, 818 Lombard Street, Portland, Ore.; *Joseph L. Furden*, 1633 Monroe Street, Washington, D. C.: Herbert H. Bauckus, Town Line, Erie County, N. Y.; Robert P. Williams, 1616 North Second Street, Harrisburg, Pa.; Frederick H. Petters, 100 High Street, Buffalo, N. Y.; Edwin B. Maynard, first lieutenant, M. R. C., Fort Benjamin Harrison, Ind.; Walter E. Koppenbrink, 5324 Bartmer Avenue, St. Louis, Mo.; Frank W. Wilson, U. S. Soldier's Home, Washington, D. C.; Clarence S. Ketcham, Union Protestant Infirmary, Baltimore, Md.; Luther M. Ferguson, 91 Arlington Street, Newton, Mass.

Examination for Medical Corps of the Navy.—The next examination will be held Nov. 15, 1915, at Washington, D. C.; Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Norfolk, Va.; Charleston, S. C.; Great Lakes (Chicago, Ill.); Mare sland, Cal., and Puget Sound, Wash. Applicants must be itizens of the United States, and must submit satisfactory vidence of preliminary education and medical education. The first stage of the examination is for appointment as assistant surgeon in the Medical Reserve Corps and embraces he following subjects: (a) anatomy, (b) physiology, (c) materia medica, (d) general medicine, (e) general surgery, and (f) obstetrics. The successful candidate then attends a ourse of instruction at the Naval Medical School, during which course he receives a salary of $2,000 per annum, with allowances for quarters, heat and light, and at the end of the ourse, if he successfully passes an examination in the subects taught at the school, he is commissioned an assistant urgeon in the Navy. Full information with regard to the physical and professional examination may be obtained by addressing the Surgeon General of the Navy, Navy Department, Washington, D. C.

Pediatric Clinical Meeting.—A meeting of pediatricians of he central and western states will be held at Chicago, Octoer 15 and 16. On the evening of October 15 a permanent organization will be effected at a meeting to be held in the Auditorium Hotel. Clinics will be held at the various pediatric centers throughout both days.

Bequests and Donations.—The following bequests and donations have recently been announced:

Brooklyn Eye and Ear Hospital, $5,000; Brooklyn Hospital, Home for Consumptives and Home for Aged Men and Aged Couples, each $2,500 by the will of Robert B. Woodward.

The German, St. Luke's, Roosevelt and Presbyterian hospitals, New York City, each an equal share in the estate of $231,158 by the will of Henry Miller.

Mexican Relief Fund, $25,000, a donation from the Rockefeller Foundation.

Hospital of the University of Pennsylvania, several beds endowed in memory of her husband, Dr. George M. Stiles, Cohocton, by the will of his widow, Mrs. Amanda Stiles.

Medico-Chirurgical College of Philadelphia, conditional bequests amounting to $150,000.

Henderson (Ky.) City Hospital, a donation of $15,000 by a citizen providing the city donate a similar amount.

Washington, D. C., Home for Incurables, $2,000 to establish the George Riggs Memorial Room; Episcopal Eye, Ear and Throat Hospital, $2,000, and Georgetown University, $4,000 for the maintenance of the Elisha Francis Riggs Memorial Hospital, by the will of Medora Riggs.

American First Aid Conference.—The American First Aid Conference referred to in these columns two weeks ago is calling on state societies for their cooperation in the form of a small committee to cooperate with the proposed organization. The following questions are also being sent to the chief surgeons of railroads, mines and manufacturers and others:

1. What has been your experience with the most available first-aid package and dressing for small and large wounds?
2. What has been your experience with the immediate employment of antiseptics in accidental wounds; what antiseptic have you used, in what strength, and how applied? Have you employed tincture of iodin; if so, how and what have been the results?
3. What in your experience has been the most efficient and most readily applied method of fixation for injuries of the (a) upper and (b) lower extremity?
4. Have you considered the construction of a stretcher, which, in addition to serving as a means of transportation of injured, will have appliances for the fixation of the upper and lower extremity, somewhat along the lines of a Bradford splint, or the Gihon naval splint?
5. Please state your views on some liquid ointment dressing which would be available for first aid in large wounds and burns with the object of preventing the usual dry-gauze dressing adhering to the wound and rendering subsequent dressings painless.

The committee asks that each question be answered on a separate sheet—each sheet signed. Those who have suggestions to make as regards this important subject should write to the secretary, Dr. Joseph C. Bloodgood, 904 North Charles Street, Baltimore.

A Real Medical Reserve Corps for the Navy.—Steps have been taken by the Navy Department to make the Medical Reserve Corps a reserve in fact for the Medical Corps of the Navy. Under the terms of a circular just issued by the department, medical reserve officers are required to bind themselves to perform active duty in the Navy whenever they are called upon by the secretary. Officers of the Medical Reserve Corps are also required to report to the Navy Department at least once in every six months as to their location and their physical fitness for military duty. Their number is limited to 300, and they are to be honorably discharged at the age of 55 years. In outlining the duties of the Medical Reserve Corps the circular says:

> When the president of the United States signs and confers a commission in the Naval Medical Reserve Corps he does so with the full realization that he is placing special trust and confidence in the ability and patriotism of the individual to whom the commission is issued, and, whether in peace or in war, this medical officer enjoys the prestige and standing that results from such recognition. Officers of this corps receive no financial return except when on active duty, and during time of peace, the number so assigned will necessarily be limited. But it is believed that love of country and pride in the possession of such a commission will influence the best among the medical profession to accept this honor and responsibility, whereby they may keep in close touch with the Navy Department, and thus be prepared to serve their country in a national emergency. Every officer of the Medical Reserve Corps will, *on appointment*, be required to bind *himself* to be subject to the laws and regulations governing said corps and to perform active duty in the Navy when called upon, at any time during a period of at least five years from date of appointment, during which period such officer will not be honorably discharged from the Medical Reserve Corps except *for physical disability* in the event that his services should no longer be required; this regulation, however, not to prevent any officer who desires to do so from submitting his resignation at any time. After five years from date of appointment, the resignation of any officer of the Medical Reserve Corps will, in the absence of special circumstances, be accepted when submitted. However, the acceptance of an officer's resignation is in all cases discretionary with the president.

FOREIGN

Deaths in the Profession Abroad.—Among those who have been killed while tending the wounded in the field is G. Heimann of Berlin, one of the pioneers in eugenics, and Prof. H. Piper of the Institute for Physiology, at Berlin. Piper's work on the physiology of the senses is well known, especially the results of application of the filament galvanometer in study of this subject.

Training Women Laboratory Helpers in Germany.—The Woman's College at Leipzig offers a special four semester course of training in all the branches needed in laboratory work. This Hochschule für Frauen is said to be especially well equipped for the purpose, as also for fitting trained nurses for superintendents' positions. The laboratory course includes, besides the usual branches, microphotography and Roentgen-ray work.

Imposters Seek to Benefit by Dearth of Physicians.—The *Deutsche medizinische Wochenschrift* states that one of the annoying by-effects of the prevailing lack of duly qualified medical men at many points is that impostors have sought to pose as regular physicians. Forged credentials and diplomas have been presented to the authorities at Leverkusen and elsewhere and the *Wochenschrift* warns of the necessity for being wary for a time in making appointments to medical positions or summoning a new physician.

List of Latin-American Physicians.—A series of manuscript consular reports on druggists, pharmacists, physicians, surgeons and dentists, which has been collected by the Bureau of Foreign and Domestic Commerce, Washington, D. C., includes the following Latin-American countries: Honduras, British Honduras, Cuba, Chile, Costa Rica, Dutch Guiana, British Guiana, Colombia, Nicaragua, Mexico, Dominican Republic, West Indies, Venezuela, Paraguay, Panama, Haiti, Salvador, Guatemala, Ecuador, Argentina, Brazil, Peru and Uruguay.

The New Public Health Department at Berlin.—About a year ago the authorities organized for the city of Berlin what is officially designated as the "Deputation für das städtische Gesundheitswesen" and the "Medizinalamt." The full-time medical officer appointed at the head of the system left for the front soon after the opening of the war, and there has been much dissatisfaction over his persisting absence from his post. He has finally returned and taken up his duties, and the municipal authorities have at last formally outlined the work for the new health department. It is to have under its care everything connected with the health of the populace, especially the supervision and promotion of the welfare of all municipal institutions and arrangements dealing with health and those supported by municipal funds. This includes welfare work for infants, for children of all ages before, during and after the school age, measures to repress alcoholism, tuberculosis and sexual diseases; further all measures to promote general hygiene (air, light, water, sewage disposal, food, housing, prophylaxis of epidemics, the disinfection system, food inspection, and finally, supervision of the municipal lodging house, workhouse, orphan asylums, hospitals, schools, bathing establishments, etc. The new Medizinalamt is practically the old municipal inspection system, and it is subordinate to the above department. The latter is expected to study and test all the questions arising in its sphere and to present its final decision to the municipal authorities, the magister or the single departments involved. The other departments and authorities are also expected to confer with this department before taking any important step that might affect the public health in any way.

WAR NOTES

Hospital for Wounded Aviators.—A convalescent home has been provided for wounded aviators in a chateau at Viry-Chatillon, Dr. Moujin, owner of the chateau, is medical director of the home.

Sanitary Commission to Leave Serbia.—Dr. Richard P. Strong, head of the American Sanitary Commission in Serbia, has sailed from Naples on his way home. He says that the majority of the American physicians who have been engaged in Red Cross work in Serbia, will leave that country by October 10.

German-American Hospital Unit Starts for the Front.—A delegation of physicians and nurses sent by the American Physicians' Expedition Committee sailed for Europe, from New York, September 9. The medical staff of the unit consists of Drs. Herman Fischer, Louis Brooks, Joseph J. Ling, J. L. Mathesheimer, together with four nurses.——Dr. William L. Bulach, New York, sailed on the same steamer to offer his services for work for the Red Cross abroad.

Heliotherapy for the Wounded.—An institution has been fitted up at Dürrheim in the Black Forest in Germany for systematic sunlight treatment of wounded soldiers and those with tuberculous lesions in the bones. The institution was organized by Bernhard of St. Moritz, who was the first to apply heliotherapy to war wounds, but his assistant, W. Staehelin, is now in charge. Dürrheim is over 2,000 feet above sea level. Torpid wounds, fistulas and delayed healing from any cause are regarded as indicating heliotherapy, as are also injuries from gangrene, frost bite and action of caustics, and large persistently secreting wounds.

Great Britain Needs More Surgeons.—Sir James Barr, vice president of the British Medical Association, in an appeal for surgeons for armies going abroad, says that 2,500 will be required, and that there will be no course open but to apply to the United States to fill the necessary complement of medical men if Great Britain cannot produce the requisite doctors.——The *Lancet*, in its issue of August 28, states that the medical schools will be very short of students on account of the large number of young men, of the educated class, who have joined the army. The future will see an increased demand for medical men, and consequently a greater prospect of success.

Red Cross Items.—Hon. Ira Nelson Morris, American minister to Sweden, has completed arrangements with the Russian and Swedish governments to facilitate the journey to Petrograd of nine physicians, thirty-nine nurses and a large quantity of supplies sent by the American Red Cross.——The physicians and nurses of the American Red Cross mission to Germany, who came to Berlin after the close of the hospital at Gleiwitz and Kosel, were given medals by the German government, September 22.——The members of the American Red Cross units of Vienna and Budapest have been given similar decorations by the Austro-Hungarian government.——The American Red Cross unit, which has been stationed at Kiev, Russia, was moved to Makarov, September 15.

BEHIND THE BEYOND WITH THE BRITISH ARMY

[The following is from a Canadian medical student who is with a British army medical corps.]

The attitude of the surgeons and nurses toward the wounded in the war is commendable in the highest. I have not witnessed in civil hospitals so much tenderness and compassion toward patients as has been exhibited in dealing with these boys from the front. If a patient is a bit restless at the approach of anesthesia, the administrator will gently and quietly allay the nervousness by ways and means not often used at home. In the admission and examination tent where the chaps come in fresh from the trenches, disheveled, dirty and weak, their vitality and nervous energy at a low ebb, the senior surgeons will gain their confidence and good will on the spot by quiet, tactful and sympathetic questioning, terminating in the inevitable "We'll fix you up all right, old man." In the whole wide world of suffering there is no class of helpless more deserving and more in need of tender ministrations than this broken humanity—the first fruits of war. In this phase of the war, America will have a share of the glory. Recently a British Tommy told me he was in the Chicago Hospital (a British general hospital operated by doctors and nurses from Chicago) "where they are absolute bricks. After being up there on the line for months, you forget that there is that sort of kindness floating around." A Harvard unit nearby is very popular with English soldiers too.

There is an interesting tale about that part of the organization which lands the wounded in the reception tent, a process which involves gathering the wounded in "no man's land," in the trenches and back of them, nearly all accomplished at night by the glare of the sickly bluish-white flares of the enemy, often only by the rays of the moon—and sometimes no light of any kind looks down on the horrors of those bloody wastes of France when the gloomy task is accomplished by the sense of touch. The system includes, too, the field dressing station and the field ambulance train. The field dressing station may not be a station at all, but is far more likely to be an upturned stump, a rock, a bit of ruin, anything that will afford a slight protection. The base for supplies and billet is the cellar of a ruined building, a deserted barn or sometimes a plain dugout. Moreover, this is the farthest outpost of succor for the wounded, and is the most mobile department of the army medical corps, save the stretcher bearers, for it is right up behind the line and, from the nature of its service, advances and retreats with it.

The field ambulance corps is the mobile unit which connects the "gathering" system on the front with the "end of steel" located not so very many miles behind the line.

At the "rail head" is a casualty clearing hospital, which is the first part of the organization to present any elements of permanence. The hospital is under canvas and has a normal capacity for several hundred, but, like all military hospitals, its service must be very flexible, capable of undertaking to succor in some way many times its accustomed number. One of our patients told me that a few months ago, after a now famous battle, he saw 5,000 wounded under the care of one of these institutions. Hundreds were on stretchers, but most of them were lying in a field on the ground without even the protection of a great coat or blanket. They were awaiting their turn for succor, and before they had been there long, hot soup for their stomachs and sterile dressing for their burning wounds would appear from somewhere. Thus one can understand that after a period of stress, either offensive or defensive, the pressure on these hospitals is enormous, so much so that the wonder of the whole situation is not that the service becomes congested but that it is possible at all to "sort" the cases. The casualty clearing hospital, as its name implies, is really a sieve from which patients are distributed to hospitals in the rear. In feverish haste the wounded are rushed back, back, back anywhere to a place of comfort and at the same time relieving the stress on the casualty clearing hospital. Those but slightly injured are treated at this hospital and sent back to the line. Those who are severely stricken by wounds or disease are sent down to the larger and less mobile hospitals, which are able to render more appropriate treatment.

Naturally enough, the extent of injury or illness is really the determining factor which sends a man back to the front or to a stationary, general or base hospital or, joy be, perhaps to "dear old Blightey" (England in the vernacular of the trenches). The first few days of the rush after an engagement are always the most satisfactory from the doctor's view, for in it the wounds are almost all clean and the cases are in pretty good shape. But as time goes on and the dregs of the deadly business come filtering in, the state of the wounds gets worse.

In reality, these hospitals are little more than rest camps, for most of the patients never see a bed but remain on their litters during their stop, and none remain longer than seven days. A few nursing sisters are attached to these hospitals. By the way, these women are the only military women anywhere near the front, and they are miles and miles away from it. As already stated the casualty clearing hospital is a rest camp where wounds are dressed, good hot nourishing meals are served and cases sorted for final distribution. In comparison with other branches of the system, the casualty clearing hospital is a crude sort of place, but it is a cog necessary for the smooth efficiency of the great system.

The next link in the service is the ambulance train, which connects the casualty clearing hospital with the hospital farther removed from active operations.

The main business of war, however, is to kill, and for that purpose wounded soldiers are a drug on the market. The moment they are out of a job, they are in the ranks of the unemployed. With this conception of the enterprise in mind, it may be understood why the first considerations of the transportation system—the next link—is not for broken and useless humanity. It must stand aside for the ever needful "munitions of war" men, ammunition and food and all the trappings thereto. Those who have "done their bit" must make way for those who are on their way to do theirs.

Thus the transference of wounded from the front to the rear is not so much a matter of the needs of the patients as of the requirements of that mystic and voracious district—the front.

In the early days of the conflict—those days of stress on the British line—these trains had to yield precedence at every turn to troop trains. The ambulance trains would run a few miles, back onto a siding and wait, wasting hours while wounds cried out for dressings and men sick unto death lacked proper treatment. But the dispatch of these trains has improved much in the year, so that now within a few hours after departure the trains arrive at their destination, usually a general hospital about 50 miles from the front. Synchronously with the departure of the train a telephone message is sent from the casualty clearing hospital to the chief of the medical district to which the train has been assigned who, in turn, advises the hospitals in his zone to prepare for the reception of a convoy. These vestibuled trains are more than palatial ambulances on wheels—they are hospitals. They are equipped to serve meals and to perform emergency operations. The trains carry a staff of about thirty-five officers, nurses and orderlies, and have accommodation for about 300 lying down patients or 400 sitting up. The usual rate of unloading is 225 stretcher cases in the hour. The atmosphere of the ambulance train is one of cheerfulness, save for the silent dark coaches where lie the grievously stricken. You see, the boys are in hopes that they are bound for a sea-port town which in the near future will mean England.

One day we walked down by the quay where the spars stick up lone and thin, down among the fisher-folk of Picardy with their sabots and corsets (arm-pit high) and the smocks of the old men. For the first time we saw an ambulance train unload. A long siding had been built, and on this the train had been switched from the main line of the ———— Railway. A very long line of ambulances, of course all motor, was arranged along the dry clean gravel path, and these were quickly, quietly, and, be it said, gently filled with stretcher-cases by the Royal Army Medical Corps men under the direction of sisters and officers.

The poor Tommies fresh from the trenches were a pretty depressed lot. We waved to some and smiled to others, but no response was forthcoming. They were grimy and tanned brown, a severe contrast to their swathings. The boys were fagged out from their slow journey from the line. The drivers were without exception very careful of their charges. I must record, however, the very sympathetic behavior of the one woman driver. She handled her car so carefully and easily and treated those boys just as though they were her own. This incident inclines me to think that skilful women drivers would be just about the best for that sort of work.

On our way out we passed some American nurses in their pure white uniforms (they have taken over a hospital nearby and fly the Red Cross, Union Jack and Stars and Stripes). We were fortunate to get a ride on one of the laden ambulances bound for our camp. The villagers were awed as we whizzed through their sleepy street. The old curé stood with uncovered head as the car with the Red Cross passed him. The Tommies off duty removed their pipes and gaped quietly after us.

When the ambulances arrive at their hospitals they are quickly unloaded, and the patients are taken to the admission tent, examined and assigned to their wards. Thus this stream of broken humanity flows from its source (in the trenches) to the sea.

Prof. William Osler is visiting us now. His son is attached to our hospital and is a most likable young fellow —a sophomore from Oxford, by the way.

As I write we are awaiting a convoy, and I am on the "reception squad" tonight, that is, I am one of the youths who stay around, maybe half the night, taking stretcher cases out of ambulances and conducting walking cases to the various wards.

BERLIN LETTER

Berlin, Sept. 7, 1915.

Personal

Professor Gocht of Halle has been appointed to succeed the late Professor Joachimsthal as director of the orthopedic clinic of the university in Berlin.

Professor Piper, extraordinary professor of physiology, director of the division of physiology in the university institute and surgeon with the troops in the field, died on the field of battle, aged 38 years. His researches were conducted largely in the physiology of the organs of sense. He made some remarkable investigations in optics and acoustics and published interesting observations on the relationship between the physiology and psychology of the mind.

The War

EMPLOYMENT OF WOMEN PHYSICIANS

Female physicians will no longer be employed in the hospitals connected with the army medical department. The reason for this action is the fact that there is a sufficient number of male physicians available for such service, and that the female physician can be employed to better advantage at home in the care of women and children. It is quite likely that personal misunderstandings may have been in part responsible for this action of the army board.

HEALTH OF SOLDIERS

According to recent official reports, the health of the troops is entirely satisfactory in the West as well as in the East. The soldiers have been singularly free from extensive epidemics. Typhoid occurs in the West only very infrequently, much less so than a year ago. This must be ascribed to the improved hygienic and sanitary conditions now prevailing in the enemy's territory and the improved methods of living. Every effort has been made to provide the troops with suitable drinking water. Three hundred transportable drinking-water apparatuses, which furnish about 800 liters of cool, palatable and healthful water, have been furnished for this purpose. Each apparatus clarifies, sterilizes, cools and reaerates all kinds of water, thus making it suitable for drinking purposes. Where such an apparatus is not available, the sanitary authorities aim to lessen, if not prevent entirely, the dangers of poor drinking water. Some supplies are stopped entirely, others are improved by bettering the condition and locations of wells and by adding chemical substances to the water, making it potable. The medical corps is continually on the lookout for individual cases of diarrhea, and when found these patients are immediately isolated and the spread of any infection thus prevented. These measures are carried out not only with the troops, but also with the civil population in the enemy's country. Experienced sanitarians can be commanded in sufficient numbers to aid and further this work, not only by giving advice and counsel, but by placing their laboratories at the disposal of the army authorities. The medical corps is convinced that the generally employed vaccination against typhoid has done much to lessen the number of cases of this disease. During the period of mobilization of the troops, typhoid inoculation could not be done as well as it has been done since. All the troops have now been vaccinated, and the soldiers in training at home are vaccinated before they leave for the front.

CHOLERA IN THE EAST

In the East, particularly east of the Weichsel, cholera has spread rather rapidly among the civil population, and after the Russian evacuation of any city the German military doctors find many cholera patients, but the spread of the disease is very promptly checked by the measures employed elsewhere for the same purpose. Thus far cholera has not become epidemic. Of great value in the prevention of intestinal diseases has been the establishment of tearooms in all cities, towns and villages through which the soldiers pass on their way to the fighting front. Tea is prepared in large quantities in these places so that every soldier can have as much as he can drink. The fact that the troops have all been vaccinated against cholera must be accepted as one of, if not the principal reason, for the failure of the disease to become epidemic. Although the persons who have been vaccinated have not invariably received full protection against cholera, still, when they have contracted the disease, it has been in mild form only, with a rapid and uneventful convalescence.

Typhus fever is no longer a cause for apprehension. Every provision possible is being made at the front to provide opportunities for bathing and disinfection of clothing. If permanent bathing facilities cannot be had, temporary arrangements are made of which the soldiers can avail themselves. More than 100 bathing wagons drawn by horses are used for this purpose. They can be moved easily from place to place. Transportable laundries have also been provided in considerable numbers. Four hundred steam disinfection apparatuses are also in use. Wherever possible, provision is made to disinfect clothing, freeing it from lice and other vermin. In short, the measures employed to prevent the occurrence of typhus epidemics are now so far-reaching that little fear need be entertained with regard to this disease ever becoming epidemic. The control of tuberculosis, genitourinary diseases and nervous and mental diseases is very gratifying.

LONDON LETTER

London, Sept. 17, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The difficulty in obtaining a sufficient number of surgeons in the new armies still continues. As a consequence the age limit has been extended for home service from 50 to 55 years, and for foreign service from 40 to 45. Men who are over 55 and fit for additional work or some form of medical practice differing from what they are doing at present have been told that they can best serve their country by doing the work of younger men and releasing them for foreign service. The War Emergency Committee of the British Medical Association is working in cooperation with the War Office for the purpose of obtaining army surgeons. At its last meeting one of the suggestions made was to import physicians from America. The question of approaching the various government departments to release physicians under 45 now employed in various ways such as health officers, and educational medical officers, was also suggested.

THE INDIAN WOUNDED: PROVISION FOR THE PRESERVATION OF CASTE

The hospital at Brighton for the Indian wounded accommodates over 2,000 patients and differs in many ways from the ordinary military hospital. It is run by officers of the Indian Medical Service, assisted by a staff of assistant surgeons belonging to the Indian Subordinate Medical Department (which consists of natives and Eurasians), Indian nursing orderlies, storekeepers, water-carriers, sweepers, and others, numbering about 400. There is no female assistance, even laundry work being done by Indian washermen, especially brought over for the purpose. Many provisions have to be made so that the various castes can observe their customs which to them are of the highest importance. There are eight different kinds of diet and separate cookhouses for six different classes. The food of the patients is cooked in twenty-one cookhouses in the hospital grounds, and that of the subordinate staff in sixteen cookhouses. The Hindu cooks must in all cases be of the same or of a higher caste than the patients for whom they cook. The chief article of diet of all the fighting races in India is a kind of bread made from partially husked grain ground by hand between two slabs of stone. As regards meat all Mohammedans eat beef, but the practice is very abhorrent to Hindus, who regard the cow as a sacred animal. For this reason no beef is allowed in the hospital. Bacon and similar meat is also strictly prohibited. As Indians must themselves slaughter the sheep which they use for food, and they must do it in the special manner enjoined by their religious sects, they have to provide in the grounds of the county abattoir a new slaughter-house for this purpose. For Hindus the custom is to sweep the head of the animal off the neck with only one stroke of a talwar or sword, while for Mohammedans the mouth of the animal is pointed toward Mecca. As an Indian must bathe the greater part of the body before each time of prayer and a good Mohammedan must pray five times daily the amount of water used in the hospital averages between 60 and 70 gallons per head per day.

A YEAR'S CASUALTIES

The British casualties for the first year of the war are as follows: killed, died of wounds, etc., 70,992; wounded, 241,086; missing, 53,466; total, 365,544.

FOOD PRICES

Some time ago your Berlin correspondent gave some figures from a Swiss journal on the increase of food prices in this country since the war and compared them with the increase in Germany to the disadvantage of this country. They did not seem to be accurate. I am now pleased to be able to give official figures, both British and German, which show, as might be expected in consequence of the almost total cessation of her foreign trade, that the increase in Germany is the greater. According to the *Board of Trade Labour Gazette,* the general level of prices as compared with a year ago is about 23 per cent. higher, while the average increase in food prices, making allowance for their relative importance in working class houses, may be put at about 35 per cent. The latest available data concerning retail food prices in Berlin, published in the official Prussian *Statistische Korrespondenz,* show that, after a sharp rise in the first month of the war, prices declined somewhat last September, but from that month moved steadily upward until July, in which month they reached a figure representing an increase of nearly 70 per cent. on the prices of July, 1914. In Vienna, taking food prices in July, 1914, as equal to 100, the index number in July this year was 178.6. The rise in food prices in the early months of the war was much less marked in Vienna than in Berlin; in the second six months, on the other hand, the upward movement was considerably more pronounced.

PARIS LETTER

Paris, Sept. 16, 1915.

The War

MEASURES AGAINST MALINGERING IN THE ARMY

The attention of the minister of war has again been drawn to the instances of voluntary mutilation which tend to multiply among men in the army. Some soldiers have not hesitated to produce diseases in themselves in order to escape the performance of their duty. Thus there have been observed cases of jaundice caused by ingestion of picric acid, cases of facial dermatitis produced by the use of irritating substances and cases of conjunctivitis produced by the application of certain powders. To put an end to these reprehensible practices, the minister recommends the application of severe penalties. Voluntary mutilation and the production of disease by a soldier in himself for the sake of escaping his duty is to be punished as a case of refusal to obey or abandonment of a post of duty.

CANNED MEAT IN THE DIET OF THE ARMIES IN THE FIELD

M. A. Kling, doctor of science and director of the municipal laboratory of Paris, and M. G. Hinard, an engineer-chemist, who occupy two important positions in the Division des Conserves du camp retranché de Paris, have just published in the Revue scientifique a very interesting study on canned meats and their utilization in the rations of the armies in the field.

In the entrenched quarters of Paris, two procedures have been employed for the manufacture of canned beef. The first is the procedure well known under the name of Appert or Chevallier-Appert and used in times of peace for army rations. It consists essentially in "blanching" the meat, that is, in giving it a preliminary partial cooking before putting it in the cans. The liquor from this cooking is concentrated so that it jellies on being cooled and is put into the cans with the meat. This blanching is less for the purpose of cooking the meat than for its partial evaporation. The meat loses from 40 to 45 per cent. of water during

John Rollen Moore, M.D. American Medical College, Eclectic, St. Louis, 1888; aged 54; for many years a practitioner of Lapel, Ind.; a director of the Greenfield (Ind.) Banking Company and president of the Greenfield Ice and Fuel Company; died at his home in Greenfield, Ind., September 13, from heart disease.

William H. Krickbaum, M.D. University of Pennsylvania, Philadelphia, 1902; aged 37; a Fellow of the American Medical Association and a member of the staff of the Danville (Pa.) State Hospital for the Insane; died in the George F. Geisinger Memorial Hospital, Danville, Pa., September 21, from typhoid fever.

John Myrick Thompson, M.D. Jefferson Medical College, 1872; aged 64; of Ocala, Fla.; formerly a member of the Florida Medical Association; visiting physician and a member of the board of managers of the Marion Hospital, Ocala, Fla.; died in Jacksonville, Fla., about June 22, from heart disease.

Porter I. Mulholland, M.D. Toledo (Ohio) Medical College, 1902; aged 40; a Fellow of the American Medical Association; assistant surgeon Ohio Naval Militia and on duty on the training ship *Essex* during its cruise in August; died at his home in Toledo, Ohio, September 20, from typhoid fever.

Colin McDougall, M.D. Bellevue Medical College, 1878; aged 74; formerly a member of the Medical Society of the State of New York; for many years physician to the Actors' Fund; a member of the staff of the New York Nose, Throat and Lung Hospital; died at his home in New York, September 19.

John Merrick Bemis, M.D. University of Vermont, Burlington, 1893; aged 55; a member of the Massachusetts Medical Society; superintendent and physician in charge of Herbert Hall, Worcester, Mass.; well known as a neurologist; died at his home in Worcester, September 22, from nephritis.

David Hunt, M.D. Harvard Medical School, 1867; aged 70; formerly a practitioner of Boston and Worcester, Mass.; an authority on medical history, and a specialist on diseases of the eye and ear; died at the home of his daughter in Detroit, September 15, from cerebral hemorrhage.

John S. Wolff, M.D. Jefferson Medical College, 1853; aged 88; for more than sixty years a practitioner of the Shiloh section of Laurens County, S. C.; in 1892 and 1894 a member of the South Carolina Legislature; died at the home of his son in Laurens, S. C., September 18.

Elijah Andrew Covington, M.D. Medical College of the State of South Carolina, Charleston, 1868; aged 77; a Confederate veteran; for many years a druggist and hardware merchant of Wadesboro, N. C.; died at his home in Wadesboro, September 12, from acute gastritis.

Edward Alexander, M.D. University of Vienna, Austria, 1854; aged 85; for forty-five years a practitioner of El Paso; at one time contract surgeon in the Army at Fort Bliss and later United States quarantine officer; died at his home in El Paso, September 18.

James Porter Davis, M.D. Medical College of Georgia, Augusta, 1883; aged 65; a Fellow of the American Medical Association; formerly chairman of the Board of Health of Tennille, Ga.; died at his home in Riddleville, Ga., September 7.

John Dickson, M.D. University of Maryland, Baltimore, 1852; aged 84; for many years a practitioner of Baltimore, but for the last quarter of a century a resident of California; died at his home in San Francisco, September 15, from senile debility.

Simeon Dosson Taylor, M.D. Vanderbilt University, Nashville, Tenn., 1887; aged 53; a member of the Kentucky State Medical Association; a practitioner and druggist of Beaver Dam, Ky.; died at his home, August 2, from typhoid fever.

Arthur W. Parker, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1881; aged 61; died at his home in Essex, Iowa, September 6, from carcinoma of the stomach and liver.

Samuel Lafayette Weed, M.D. University of Alabama, Mobile, 1886; aged 56; of Helena, Ala.; died in an infirmary in Birmingham, Ala., September 9.

William A. Settle, M.D. University of Louisville, Ky., '77; aged 65; died at his home in Greensburg, Ky., September 14.

Correspondence

Sign for Distinguishing Gaseous Distention from Appendicitis

To the Editor:—I have on several occasions noted a sign which appears to be of value in differentiating between acute appendicitis and simple gaseous distention of the cecum associated with acute bowel fermentation. So far as I know the sign has never been described. It is elicited as follows:

Gentle pressure is brought to bear over the cecum, pressing in an upward direction. If the condition is simply gaseous distention, the patient will complain of pain in this region, but also complains of pain in left hypochondrium; pain disappears when the pressure is relieved. The explanation appears to be this: The enormous quantity of gas in the cecum is forced upward by the pressure, passing along the ascending and transverse colon, but is caught at the acute splenic flexure. The sharp impact of the gas here causes pain. This sign has on several occasions been of value to me and prevented operation in doubtful cases.

S. Salzman, M.D., Toledo, Ohio.

Emetin: A Warning

To the Editor:—Those using emetin solutions should be very careful not to get any in the eyes. This accident is followed by a very severe reaction. There is no pain at first, but in about eight hours there is an uncomfortable, "scratchy" feeling, intense photophobia and lacrimation, with conjunctival and some circumcorneal injection. Duration is about two days. To date I have seen two cases. A detailed report of these cases will be published later.

Julian B. Blue, M.D., Memphis, Tenn.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter *must* contain the writer's name and address, but these will be omitted, on request.

LUETIN TEST—DIONIN IN CATARACT

To the Editor:—1. Can you advise me regarding the reliability of the luetin test which is now being marketed commercially? Has any comparison been made between that and the Wassermann and Noguchi tests?

2. Can you express an opinion on the treatment of cataract by the use of dionin (ethyl-morphin hydrochlorid); either in the conjunctival sac or by subconjunctival injection, or by the use of any form of electric current? Is there any recent literature on these subjects?

E. B. J.

Answer.—1. The luetin test is described on page 334 of New and Nonofficial Remedies, 1915. Numerous references occur in the literature to comparisons of results with this test and with the Wassermann and the Noguchi modification of the Wassermann. The article in New and Nonofficial Remedies says:

> "Luetin is employed for the diagnosis of syphilis. It is of use in the examination of tertiary cases but rarely gives a positive reaction in the primary cases or in untreated secondary cases. In patients who are under treatment by mercury or salvarsan, the reaction is frequently positive even in cases which fail to give a positive Wassermann reaction."

2. The nonoperative treatment of cataract has occupied the attention of ophthalmologists from the earliest times, both before and since its pathology was understood. It is true that in some cases of genuine cataract the opacity has disappeared without treatment, and it is not uncommon to see the disappearance of diabetic striae and the occasional absorption of exudates between the fibrillae of the lens which have produced more or less cloudiness. Attempts have been made to cure this condition by the employment of various drugs, massage with various ointments, the use of galvanism, the subconjunctival injection of potassium iodid, dionin, mercury, etc. In cases of incipient senile cataract a number

of ophthalmologists have reported good results in delaying the development of opacities by the subconjunctival injection of potassium iodid combined with the use of dionin powder insufflated into the conjunctival sac. The great majority of cases of cataract, however, are progressive and show no improvement under any form of local treatment; when useful vision is lost a surgical operation is the only treatment. Volumes II and III of "The American [illegible] Ophthalmology" contain a complete summar[illegible] with bibliographic references to the most recent literature.

REFERENCES ON SOCIAL MEDICINE

To the Editor:—I am interested in the subject of social medicine. Please give me some data as to where I can obtain literature on this subject.

W. L. Albin, M.D., University Place, Neb.

Answer.—The following list of references may be consulted on this subject:

A State Medical Service, The Journal, *Jan. 31, 1914, p. 391.*

Socialization of Medicine in England, The Journal, Jan. 24, 1914, p. 316.

Warbasse, J. P.: Socialization of Medicine, The Journal, July 18, 1914, p. 284.

Bevan, A. D.: Medicine a Function of the State, The Journal, March 14, 1914, p. 821.

The Insurance Conflict, The Journal, Feb. 14, 1914, p. 549.

Benefits of the British Insurance Act, The Journal, July 26, 1913.

A New Form of Insurance in England, The Journal, Jan. 22, 1909.

Medical Men: Their Place and Influence in the State, *Brit. Med. Jour.*, Feb. 14, 1914.

Industrial Insurance in Germany, The Journal, March 28, 1914, p. 1039.

The Place of Medical Men in the Modern State, The Journal, April 4, 1914, p. 1112.

The National Insurance Act and Scarcity of Physicians, The Journal, Jan. 17, 1914, p. 218.

Medical Remuneration Under the Insurance Act, The Journal, March 21, 1914, p. 945.

Mr. Lloyd-George on the Insurance Act, The Journal, March 7, 1914, p. 789.

Carroll, J. B.: Workmen's Compensation Law and the Physician, *Boston Med. and Surg. Jour.*, Jan. 1, 1914.

French, J. R.: Medical Situation of New Workmen's Compensation Act, *California State Jour. of Med.*, April, 1914.

Oliver, T.: Medico-Social Problems from an Insurance Point of View, *Lancet*, London, April 4, 1914.

Rogers, B. M. H.: Experiences of Medical Adviser Under Insurance Act, *Brit. Med. Jour.*, June 28, 1913.

Rowntree, C.: Workmen's Compensation Act and Physician, *Practitioner*, August, 1913.

Merrick, R. M.: Workmen's Compensation Act as It Affects Physicians, *Boston Med. and Surg. Jour.*, Sept. 18, 1913.

The Crisis in Germany, The Journal, Dec. 13, 1913, p. 2163.

Medical Insurance Abroad, The Journal, Dec. 27, 1913, p. 2314.

Benefits of the British Insurance. The Journal, July 26, 1913, p. 296.

Social Insurance (Excerpts from the report of the Judicial Council submitted to the House of Delegates at San Francisco, June 21, 1915), *Am. Med. Assn. Bull.*, May 15, 1915.

BINET-SIMON TEST—HEALY TEST—D'ESPINE SIGN—KORANYI SIGN—EWART SIGN

To the Editor:—Please describe for me: (1) the Binet-Simon test of mentality; (2) the Healy psychologic test; (3) the D'Espine sign; (4) the Korányi sign, and (5) Ewart's sign.

C. R. Byers, M.D., Bay City, Texas.

Answer.—1. The inquiry regarding the Binet-Simon test was answered in The Journal, Jan. 13, 1912. This series of tests is published in a pamphlet by A. Binet and T. Simon, entitled "A Method of Measuring the Development of the Intelligence of Young Children," published by the Courier Company, Lincoln, Ill.; price, $1. A list of the recent literature on this subject was published in The Journal, Jan. 10, 1914. The series of questions and problems in this test are too extensive for publication in this department.

2. The Healy psychologic test is described in a monograph by William Healy and Grace Fernald, published by the Psychologic Review Publishing Company, Princeton University, Princeton, N. J.

2. In 1907, D'Espine (*Bull. de l'Acad. de méd.*, Paris, 1907, lxii, 167) drew attention to a sign which he considered diagnostic of enlargements of the bronchial glands. He stated that in young children the whispered voice normally ceases at the level of the seventh cervical spine posteriorly. When, however, there is enlargement of the lymph nodes and the patient whispers "three thirty three," or similar numbers, bronchophony is heard over the upper thoracic spine as well. A recent study of this sign has been made by H. F. Stoll ("The Diagnostic Significance of D'Espine's Sign," *Am. Jour. Dis*[illegible] September, 1915, p. 183.

4. Korányi's sign is the same as Grocco's sign. In a medium-sized pleural effusion an S-shaped dulness can be determined as the upper limit of the effusion. The line begins rather low down at the spine, curves upward and obliquely across the chest into the axilla, then descends to the sternum. Movable dulness may be determined with changes in the patient's position. A triangular area of dulness may be found on the opposite side of the effusion. The base is at the level of the lower border of the lung and the apex about the height of the upper level of dulness. This latter finding is known as Grocco's sign. The presence of a normal triangular area of paravertebral dulness diminishes the diagnostic value of this sign. Reference may be made to Musser, "Medical Diagnosis," p. 604, and F. Smithies; (*Arch. Diag.*, April, 1912; Abst., The Journal, June 22, 1912).

5. Ewart's sign is of importance in the diagnosis of pericardial effusion. It is the prominence of the sternal end of the left first rib with elevation of the head of the clavicle.

ULTRAVIOLET RAYS AND INCANDESCENT ELECTRIC LIGHTS IN INFLAMMATORY CONDITIONS

To the Editor:—1. What candle power of incandescent electric lights produces the most ultraviolet rays?

2. What is the value of the ultraviolet rays so produced, for the treatment of acute inflammations like cellulitis, and for deep-seated chronic inflammations?

C. D. E., Oregon.

Answer.—1. The incandescent electric light produces few ultraviolet rays. Its spectrum contains not nearly so many ultraviolet rays as the arc light. The greatest quantity of ultraviolet rays is produced by incandescent mercury vapor in the mercury vapor lamps of the Cooper-Hewitt type. In order to get a large number of these rays for therapeutic purposes these mercury lamps must be made of quartz, which permits the passage of nearly all violet and ultraviolet rays. Glass absorbs a great quantity of these rays.

2. Ultraviolet rays penetrate tissue only slightly—not more than one-half inch—when the tissues are compressed so that they are almost bloodless. They scarcely penetrate blood at all. It is difficult to see how ultraviolet rays can be of any therapeutic value in treating any sort of process not near the surface of the skin. In the so-called ultraviolet lamps in which the source of light is an incandescent electric light, usually backed by a parabolic reflector, all the effects that can be obtained from light are on the surface. Because of the absence of ultraviolet rays in this light, it is probable that its physiologic effect is inappreciable; whatever therapeutic powers such lamps possess are perhaps due to the heat given off by them, which, in the case of incandescent lights, is considerable.

MORTALITY FROM RATTLESNAKE BITES

To the Editor:—Will you kindly inform me regarding the relative mortality from rattlesnake bites?

R. N. Pierson, Stamford, Conn.

Answer.—Prentiss Willson, in a very complete article on the general subject, which includes a summary of the literature (Snake Poisoning in the United States, *Arch. Int. Med.*, June, 1908, p. 516), says:

> "The mortality from the bites of American serpents has never been satisfactorily determined. Mitchell, in 1860, stated that in 57 cases of rattlesnake bite mentioned in the literature, five patients died. This would represent a mortality of 8.7 per cent. Elzey, whose opinion is often quoted, merely estimated that in 15 per cent. of cases of rattlesnake bite in adults, the patients would die, if left untreated. Barringer stated his belief that the mortality from rattlesnake bite would not exceed 10 per cent. and from copperhead bite 1 per cent. The mortality from water moccasin bite, he thought, would fall below even this last figure. *There were 78 fatal cases in the total of 740 which I have* collected, a mortality of 10.5 per cent. This figure represents the mortality of all species combined, and in my opinion may be accepted as representing with considerable accuracy the actual mortality attending snake bite in the United States, the number of cases on which it is based being considerable, and having been collected from sufficiently varied sources. As tending to prove the accuracy of this rate, it may be stated that the mortality rates for cases collected from the literature and from various private sources were, respectively, 10.2 per cent. and 10.7 per cent., a variation of only 0.5 per cent. The mortality rate for the different species will be given later in considering the effect of species on the prognosis."

In a tabulation of 624 cases of snakebite, in which the species were known more or less definitely, Willson found a mortality rate for all rattlesnake cases of 11.7 per cent. This he considers approximately correct.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., *Torrington*.

District of Columbia: Washington, October 12. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

Georgia: Atlanta, October 12. Sec., Dr. C. T. Nolan, Marietta.

Illinois: Chicago, October 13-15. Sec., Dr. C. St. Clair Drake, Springfield.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Kansas: Topeka, October 12-14. Sec., Dr. H. A. Dykes, Lebanon.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Michigan: Lansing, October 12-14. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

Oklahoma: Oklahoma City, October 12. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Wyoming: Laramie, October 13-15. Sec., Dr. H. E. McCollum, Laramie.

North Carolina June Report

Dr. H. A. Royster, secretary of the Board of Medical Examiners of the State of North Carolina, reports the oral and written examination held at Greensboro, June 8-11, 1915. The total number of subjects examined in was 13; total number of questions asked, 70; percentage required to pass, 80. The total number of candidates examined was 134, of whom 104 passed and 30 failed. Thirty-two candidates were licensed through reciprocity. Two nongraduates were granted limited licenses. The following colleges were represented:

College	PASSED Year Grad.	Total No. Licensed
Southern College of Medicine and Surgery	(1912)	1
Chicago Co gery	(1912) (1913)	2
University	(1915)	1
Baltimore	(1907)	1
College of	(1914, 2) (1915)	3
Johns Hopkins University	(1907) (1915, 2)	3
University of Maryland	(1912) (1914) (1915, 10)	12
Columbia Univ., College of P. and S.	(1911) (1915, 4)	5
Leonard Medical School	(1913, 4) (1914, 2)	6
North Carolina Medical College	(1913) (1914, 3) (1915, 17)	21
Jefferson Medical College	(1915)	12
Medico-Chirurgical Coll. of Phila	(1915, 2)	2
	(1914) (1915, 4)	5
ennsylvania	(1914) (1915)	2
S. C.	(1915)	1
	(1908)	1
	(1915)	3
	(1915)	1
University of West Tennessee	(1912) (1915, 2)	3
Medical College of Virginia	(1913, 2) (1914) (1915, 15)	18
University of Virginia	(1915)	1
FAILED		
Atlanta Medical College	(1914)	1
College of P. and S., Keokuk	(1877)	1
University of Louisville	(1914)	1
College of P. and S., Boston	(1911) (1914)	2
Leonard Medical School	(1911) (1912)	2
N. C. Med. Coll.	(1905) (1912) (1913) (1914, 2) (1915, 2)	7
Medico-Chirurgical College of Philadelphia	(1898)	1
Medical College of the State of S. C.	(1901) (1911)	2
Chattanooga Medical College	(1903)	1
Lincoln Memorial University	(1911)	1
Meharry Medical College	(1915)	1
University of the South	(1905) (1909)	2
University of West Tennessee	(1914) (1915, 3)	4
Medical College of Virginia	(1914) (1915, 3)	4

College	LICENSED THROUGH RECIPROCITY Year Grad.	Reciprocity with
University of Alabama	(1908)	Alabama
University of Colorado	(1906)	Colorado
Howard University	(1909)	S. Carolina
Atlanta Medical College	(1884)	Georgia
University of Georgia	(1911)	Georgia
College of P. and S., Chicago	(1910)	Illinois
Kentucky School of Medicine	(1905)	Kentucky
Tulane University of Louisiana	(1914)	Louisiana
Johns Hopkins University	(1912)	Maryland
University of Maryland (1902, 3) South Carolina, Pennsylvania, Virginia; (1909) South Carolina; (1911, 2) Maryland, South Carolina; (1912) South Carolina; (1913, 2) Maryland.		
University Medical College of Kansas City	(1911)	Kansas
Columbia Univ., Coll of Phys. and Surgs.	(1912)	New York
Cornell University	(1912)	New York
Medico-Chirurgical College of Phila	(1906)	Penna.
Medical Coll. of the State of S. C.	(1886) (1905)	S. Carolina
University of Nashville	(1893)	S. Carolina
University of Tennessee	(1903)	Oklahoma
University of the South	(1899)	Georgia
Vanderbilt University	(1891)	Georgia
Medical College of Virginia	(1910)	Virginia
Univ. Coll of Med., Richmond	(1898) (1912) (1913)	Virginia

Illinois June Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, June 24-26, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 200, of whom 177 passed and 23 failed, including 4 candidates who did not complete the examination. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
Bennett Medical College	(1913) (1914, 3) (1915, 21)	25
Chicago College of Med. and Surg.	(1914, 2) (1915, 26)	28
Hahnemann Med. Coll. and Hosp., Chicago	(1914, 2) (1915, 9)	11
Jenner Medical College	(1915)	11
Northwestern University	(1914) (1915, 12)	13
Rush Medical College	(1914) (1915, 29)	30
University of Illinois	(1912) (1915, 45)	46
University of Louisville	(1910) (1915)	2
University of Maryland	(1915)	1
Harvard University	(1912) (1915)	2
University of Minnesota	(1893)	1
St. Louis University	(1915)	2
Washington University	(1915)	1
John A. Creighton Medical College	(1911)	1
Meharry Medical College	(1915)	2
Catholic University, Louvain	(1895)	1
FAILED		
Bennett Medical College	(1914, 3) (1915, 3)	6
Chicago College of Med. and Surg.	(1914, 2) (1915, 3)	5
Chicago Hosp. Coll. of Medicine	(1915)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1915)	2
National Med. Univ., Chicago	(1909)	1
University of Illinois	(1913) (1915)	2
National Univ. of Arts and Sciences	(1914)	1
University of Pennsylvania	(1896)	1

Alaska July Report

Dr. H. C. DeVighne, secretary of the Alaska Board of Medical Examiners, reports the written examination held at Juneau, Alaska, July 6, 1915. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 6, all of whom passed. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
College of P. and S., San Francisco	(1909)	76.5
University of Georgia	(1912)	80
Rush Medical College	(1889)	75
State Univ. of Iowa, College of Medicine	(1886)	75.8
University of Mich. Medical School	(1900)	77
Marion-Sims College of Medicine	(1898)	80.9

Arizona July Report

Dr. John Wix Thomas, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 6-7, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 9, of whom 5 passed, including 2 osteopaths, and 4 failed, including 2 osteopaths. The following colleges were represented:

College	PASSED Year Grad.	Per Cent.
University of Southern California	(1899)	78
Tufts College Medical School	(1906)	75.1
Medico-Chirurgical College of Phila	(1902)	76.8
FAILED		
College of P. and S., San Francisco	(1913)	71.2
Vanderbilt University	(1914)	72.2

Book Notices

A MANUAL FOR HEALTH OFFICERS. By J. Scott MacNutt, A.B., S.B. Foreword by William T. Sedgwick, Professor of Biology and Public Health in the Massachusetts Institute of Technology. Cloth. Price, $3 net. Pp. 660, with illustrations. New York: John Wiley & Sons, 1915.

The increasing number of workers in the public health field, both physicians and laymen, has created a distinct demand for a compact, practical, up-to-date reference book for health officers. The fact that Mr. MacNutt's training was secured, not in a medical school, but in the Massachusetts Institute of Technology, has naturally influenced both his point of view and his method of treatment. The publication of such a volume by a nonmedical man is conclusive evidence of the way in which the entire public health field is widening. The book is divided into two main parts, the first dealing with health authorities, their organization and powers and the second with public health administration. Under the first head, local, state and federal health authorities and their functions are discussed; also unofficial organizations. In the section on public health administration, the greater part of the space is naturally devoted to the discussion of communicable diseases and methods for their prevention. Child hygiene, food sanitation, water supply and housing are also discussed. While the book is one of the best practical manuals for health officers that has appeared recently and while its perusal will be of marked benefit and interest to every one interested in public health administration, the lack of medical training on the part of the writer is evident throughout. Equally evident is the lack of familiarity with the large amount of material on public health questions to be found in the leading medical journals, most of the periodical references being to one or two journals. It is also noticeable that most of the material and information utilized in the volume is drawn from a few of the eastern states. Mr. MacNutt's book is worthy of careful study, but it is unfortunately limited in both its material and its point of view.

A TEXT-BOOK OF MEDICAL JURISPRUDENCE AND TOXICOLOGY. By John Glaister, M.D., D.P.H., F.R.S.E., Professor of Forensic Medicine in the University of Glasgow. Third Edition. Cloth. Price, $5 net. Pp. 857, with 138 illustrations. New York: William Wood & Co., 1915.

Dr. Glaister's work is now issued in two volumes, one on "Medical Jurisprudence and Toxicology" and the other on "Public Health." Since its last appearance, the book has been thoroughly revised and rearranged and a more complete and detailed index prepared. While it is naturally of greater value to the English reader because it applies to legal procedure in that country, yet the breadth of Dr. Glaister's experience and the large amount of data which he has collected must make this book of interest to all students of medical jurisprudence. Especially interesting are the chapters on "Personal Identity," "Finger Prints," "the Identification of the Dead," "Gunshot Wounds" and "Deaths by Lightning and Electricity." Poisons and poisoning are exhaustively discussed. The chapter on "Wounds and Their Medicolegal Relations" is well illustrated and illuminated by copious extracts from case reports. The microscopic and chemical identification of blood and other body fluids is also authoritatively considered. The third edition of this work is a marked improvement over the preceding editions.

THE EARLY DIAGNOSIS OF HEART FAILURE AND OTHER ESSAYS ON THE HEART AND CIRCULATION. By T. Stacey Wilson, M.D., F.R.C.P., B.Sc., Senior Physician, General Hospital, Birmingham. Cloth. Price, $4.50 net. Pp. 617, with illustrations. New York: William Wood & Co., 1915.

There are in this book several essays dealing with the heart and circulation. Most of them treat of heart failure. Had Wilson selected a few of his newer ideas, such as the "high diaphragm" or "diminution in the area of liver dul[illegible]s" as signs of myocardial weakness, or the "distensibility [illegible] heart wa[illegible]" and emphasized these, omitting many of [illegible] physical examination of the heart and [illegible] his argument would have gained in effectiveness from concentration. As it is, even with his summaries and wearisome repetition, it is hard at times to make out what he is driving at. There is much that is suggestive in the book and it shows painstaking and conscientious study of an important subject along somewhat new lines. It is not always recognized that the heart that fails may in the one case enlarge, while in the other instance the lack of distensibility of the heart wall causes the organ to remain small. These and other points are well worth consideration by practitioners, for whom the book is primarily intended.

URGENT SYMPTOMS IN MEDICAL PRACTICE. By Robert Saundby, M.D., Lieutenant-Colonel, R.A.M.C. Cloth. Price, $2.10 net. Pp. 437. New York: Longmans, Green & Co., 1915.

Saundby has arranged alphabetically an indiscriminate list of subjects, covering not only what the title indicates, but other fields of medicine as well. He includes not only symptoms but many diseases and several pathologic tests. In the selection of the subjects covered there seems to be neither rhyme nor reason. No subject is covered completely. Such subjects as acne, alopecia, genital spots, immunity, keloid or paralysis agitans can hardly be listed as urgent. In the discussion of treatment the author is exceptionally free in his references to proprietaries, some ethical and others not so good. As a reference work to the things in it the book has a certain value.

Miscellany

"The Brides in a Bath" Case

The most sensational murder case in England since the Crippen trial has terminated in the conviction of George Joseph Smith, aged 43. The case is extraordinary in the annals of criminal jurisprudence, and presents several points of medicolegal interest. The prisoner contracted bigamous marriages with three women who soon afterward were found dead in a bath in very similar circumstances. The physicians who were called in, while rightly coming to the conclusion that death was due to drowning, were hoodwinked as to the cause, and thought that the death was accidental. The prisoner, a short time before each death, cunningly took the women to the physicians with the complaint of headache or fits, so as to facilitate the belief that death was due to natural causes. The deaths took place in lodging houses. After them he managed to slip out and return after buying food and pretended that he had just found the woman dead. The theory of the prosecution was that he pulled up the legs in such a position that the head would be submerged and the woman incapable of successfully struggling or screaming. In one case the physician thought that the woman had an epileptic seizure while in the bath and was thus drowned, but there was no proof, merely the prisoner's allegation, that she suffered from epilepsy. In another case the physician thought that the woman fainted from the heat of the bath and was drowned. The evidence of Dr. Spilsbury, medicolegal expert, was important. In the case of two of the baths he thought it was impossible for the head to be accidentally submerged so as to cause drowning. In one, while the woman's height was 5 feet 8 inches, the bath measured only 5 feet at the top, and 3 feet 8 inches at the bottom. In one case a piece of soap was found grasped in the hand after death. Dr. Spilsbury said that if the woman had fainted, the muscles would have been relaxed and the soap would have fallen out. If she had had a fit, it would probably have been retained in the first stage, but in the second or clonic stage would more likely have fallen out, and certainly would have fallen out in the third stage of exhaustion. He concluded, therefore, that consciousness was not lost before death, but that death was due to submersion, and that the contraction of the muscles passed into rigor mortis, causing the soap to be retained. It was never even proved that the prisoner was in the bath room at the time of death, and therefore the evidence was entirely circumstantial. The judge pointed out the following series of coincidences in the circumstances of the three deaths, which were too many to be regarded as accidental: 1. In each case there was a death in a bath, and in each case the prisoner had moved to that bath room or fitted it up within a week before the death. 2. In each case the bath room in which the death took place was unlocked, so that the prisoner could go into it, although in two cases it was in a strange house and other lodgers might enter. 3. In each case the dead woman made her will in favor of the prisoner within a week before her death. 4. In two of the cases, the dead woman insured her life within ten days before her death; in the third case there was no insurance because there was considerable property which would pass on death. 5. In each case, all the debts due to the dead woman and all savings bank accounts had been realized just before death. 6. In each case, two or three days before the death the woman was taken to a strange physician in a strange place complaining of headache, and that physician was called in after death. 7. In each case, a letter was written to the woman's relatives a day before her death. 8. In each case, the prisoner had gone out to buy food when the woman was found drowned. 9. In each case, the prisoner found her, left her in the water until some one had seen her, and did not get rid of the water without permission. 10. In each case, it was a bigamous marriage. 11. In each case, he benefited more by death than by life. 12. In each case, he buried the woman as quickly as possible. It is to be noted that the evidence in any one of the three cases was so slight that the prisoner could scarcely have been put on his trial. Indeed, no suspicions were even aroused until the third case. Then the remarkable series of coincidences given above proved fatal to the prisoner.

The Pennsylvania Department of Health Exhibit at the Panama-Pacific International Exposition

The mammoth exhibit of the commonwealth of Pennsylvania is a credit to that state and to its commissioner of health, Dr. Samuel G. Dixon. The exhibit is surrounded on all sides with white pennants, each bearing an attractive green keystone; from the center beam and at each end are draped the Stars and Stripes, side by side with the blue silk flag of Pennsylvania. Almost the first thing that arrests the eye is the sentiment written by Dr. Dixon: "The varied industries on which we depend for our comfort, the wealth which enables us to enjoy them, and the arts of civilization which adorn and diversify our lives are but the fruitage of the tree whose root is health." The exhibit graphically portrays the activities of the department, roughly divided into three separate sections: school hygiene, typhoid fever and sanitary engineering, and the tuberculosis work of the department.

In the section on school hygiene are pictures showing the inspection of rural schoolchildren, of which Pennsylvania inspects approximately 400,000 a year. Statistics give the percentage of defects found under vision, hearing, teeth, nose and throat, skin diseases, nervous diseases and tuberculosis in all its forms. It is perhaps the only state in the union which has undertaken medical and sanitary inspection of rural schools on such a vast scale, under state supervision. The dangers of the common towel are made clear by life-sized wax models of pupils, the evolution of the sanitary drinking cup and fountain is illustrated, and good and bad seating facilities in schools are shown by life-sized wax models of boys and girls in actual seats placed at adjustable desks. Transparencies depict the progress and evolution of schoolhouses, from the old insanitary, unlighted country school to the modern, pleasant, well-lighted building. A model of an artistic school building and grounds and its screened outhouses suggests the ideal.

The division devoted to typhoid fever and sanitary engineering covers a large area. There are models of a complete sewage-disposal plant, and of towns and cities in which epidemics of typhoid fever occur. The manner and the source of infection are shown by miniature houses and the depiction of streams and leaky flumes, overflowing vaults, carelessness at dairy farms, inadequate care of sewage from trains and boats, and the pollution of streams by dead animals and outhouses.

No part of the exhibit has attracted more attention than that which portrays by models, pictures or transparencies the work of Pennsylvania for the care of consumptives, and the work that is going to educate the people for its prevention. Models are shown of Pennsylvania's three large sanatoriums which can accommodate approximately 2,000 patients afflicted with this disease. Types of cottages used at the "camp" and occupied by the patients in the incipient stages are reproduced with every detail, even to the miniature bed, bedclothes and wash basin in each room. The work of the visiting or dispensary nurse is shown by transparencies. The work of the new Bureau of Housing is also indicated, as well as that by the bacteriologic and pathologic laboratory, where all specimens are sent for examination.

Dr. Dixon and the exhibit were each awarded a gold medal.

The Undiagnosable

"It is one of the commonplaces of worldly wisdom not to try to educate the public. The business man will make his boldest bid to supply an already existent demand, or to create a demand for something that he wants to sell; but he is never supposed to succeed if he spends his time and money in getting the world at large to do what it ought, instead of allowing it to do what it often vainly imagines is to its own advantage. The medical profession can, to a certain extent, contradict this assertion; we are, spasmodically and vicariously, it is true, making the people at large put up with methods that are clearly not so satisfying to them as those that they replace, and not only that, but we are persuading people actually to prefer the more uninviting system. Nothing could have been more comforting to the world of sick in general than the old belief in the infallibility of the physician. To know for an absolute certainity that the whole case lay bare before one's medical adviser, as if he were gifted with a diagnostic combination of the Roentgen ray and clairvoyance which showed him all the iniquities of the pecant organism like an open book, must have been a boon that contributed not a little to the peace of mind, and so indirectly, to the more rapid recovery of the patient. But it was not true.

"It may be argued that that was but a detail. If the application of the false is a suitable therapeutic agent, why should we go out of our way to avoid it when in addition it offers all the additional advantages of being the path of least resistance? We may tell ourselves that if our patients do not suffer by a little undue dogmatism and unjustifiable confidence on our part, we have done them no harm, and have at any rate, sustained our own reputation. We forget the harm we do to ourselves. Slipshod untruth is unscientific. We need not refer to its ethics. It is in the wrong spirit. Its practice makes us only too ready to repeat it out of sheer laziness. And the next thing is that we find ourselves dividing cases into those of M. F. S., Mist. Carm., Mist. Expect. Sed., and so on, which is obviously fatal to anything but a commercial success in the practice of medicine. It is to our credit that we have educated so many of our patients to look on us as fallible, as people like themselves, to whom mistakes are possible and who do not know everything. Such a spirit is the right one if we wish for the real advancement of medicine, and, as a sop for Cerberus, it pays in the long run."—*Medical Press and Circular.*

The Engineer in Public Health Work.—There are certain good reasons for the evolution [the engineer in public health work], for health work no longer stands on the basis of medicine alone. Light, ventilation and humidity come into the problem of health; construction is most important, and in these matters the value of the engineer is obvious. Health administration never can be independent of medical skill and practice—medicine and engineering must go hand in hand.—*American Journal of Public Health.*

Society Proceedings

COMING MEETINGS

American Association of Railway Surgeons, Chicago, Oct. 13-15.
Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Colorado State Medical Society, Denver, Oct. 5-9.
Delaware State Medical Society, Wilmington, Oct. 11-12.
Medical Association of the Southwest, Oklahoma City, Oct. 12-13.
Mississippi Valley Medical Association, Lexington, Ky., Oct. 19-21.
National Assn. for the Study of Pellagra, Columbia, S. C., Oct. 21-22.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Vermont State Medical Society, Burlington, Oct. 14-15.
Virginia State Medical Society, Richmond, Oct. 26-28.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

The President, Dr. Edward B. Heckel, Pittsburgh, in the Chair

Civic Responsibility of the Physician and the Medical Society

Dr. John B. McAlister, Harrisburg: Some of the most vital problems for thought are: (1) Standardization of the profession throughout the country. May we live to see the day when a licensed doctor in Oklahoma is a licensed doctor in Pennsylvania. (2) Medical legislation in Pennsylvania. Our legislative committee needs our wisest judgment and conscientious cooperation. The establishment of a board of regents similar to the New York Board of Regents would solve the problem of the constant struggle to protect our own standards, protect the public against fraud and incompetency, relieve us of the reproach of bigotry and selfishness and prevent the multiplicity of examining boards. (3) Preventive medicine calls loudly for a National Health Department in the Federal Government. (4) Cancer and tuberculosis which are preventable at some stage. (5) The doctor and the newspaper. The newspaper is more powerful than all the guns of all the armies in the world. The doctor and the press should join forces for the public good. The press is of inestimable service in educating the public in health, hygiene and preventive medicine, and in influencing legislatures.

Report of the Subcommittee on Cancer for 1915

Dr. Jonathan M. Wainwright: This society was the first organization in this country to make any systematic effort to attack this problem. Our first effort was to induce every medical college professor interested in a subject approaching cancer to impress on his students the fundamental points of the cancer campaign. We hope to induce our examining boards to insist on a proper knowledge of cancer. We have tried to induce every nurse's training school in the state to have their nurses properly instructed regarding the disease. Perhaps the most efficient plan by which the society has worked has been through our county societies. In June thirty-eight counties held meetings devoted to this subject. We believe that much the most important and efficient single effort ever made in this country and perhaps abroad in the attack on cancer has been the effort to have our medical journals devote a major part of their July issue to the cancer campaign. Sixty-five journals responded. The American Society for the Control of Cancer is cooperating with our society.

Scopolamin-Morphin Anesthesia in Obstetrics

Dr. James R. Freeland, Pittsburgh: The literature appearing in association with this subject in the last fifteen months is to be classed largely as advertising matter. Scopolamin should be considered simply as a useful sedative in selected cases. This attitude is probably responsible for our good results. Complete amnesia should not be regarded as the main object. The attitude of the physician toward patients demanding "twilight sleep" should be that of reserving the right to choose the anesthetic just as the surgeon does. The demand for painless labor denotes an unhealthy mental attitude.

DISCUSSION

Dr. Barton Cooke Hirst, Philadelphia: In a series of cases I find the disadvantages of this method to be—if there is given enough scopolamin and morphia to produce indifference to pain—prolongation of labor, tendency to atony of the uterus with hemorrhage and an increased proportion of apneic babies that cannot be revived. If one tries to escape these disadvantages by following the latest methods of giving minimum doses of the two drugs, the disadvantages disappear but the relief afforded is scarcely noticeable, in my experience. However, the advantages of this method are not to be ignored, and I have found it useful in primiparas of a neurotic type, apt to have a long painful labor. Here I use it not to relieve pain so much as for psychologic effect, which we cannot afford to ignore. I employ all the accessories, the darkened room and the banishment of everyone but a trained nurse and the doctor. It is not fair to take a negative stand in the criticism of any method unless some alternative is proposed. We should earnestly endeavor to preach a proper solution of this subject. I am at present making some experiments with cannabis indica as a drug which may relieve the pains of childbirth without disadvantage to mother or child.

Dr. Daniel Longaker, Philadelphia: The full benefit of scopolamin is obtained only when we secure complete amnesia. Every woman should be transferred to the specially appointed hospital for her confinement, regardless of the method of delivery. I agree with Dr. Freeland that the apnea is due to the morphia. There are certain cases in which neither scopolamin nor morphin should be used.

Dr. James R. Freeland: I am sorry I cannot join the enthusiasts for the use of scopolamin. My first objection is the name, "twilight sleep." It is a trade name, and has no place in the practice of medicine. The matter of suggestion is harmful to the patients and a certain proportion will come later into the hands of the neurologist.

Some Criteria Underlying Prognosis in Certain Forms of Cardiac Insufficiency

Dr. James E. Talley: The average patient of middle life with symptoms suggesting beginning cardiac insufficiency will probably have either (1) primary chronic endocardial or myocardial disease, usually rheumatic; (2) primary endocardial or myocardial disease with secondary nephritis; (3) primary renal disease with a secondary myocardial and vascular disease; (4) primary arterial or arteriocapillary sclerosis with secondary cardiac and renal disease; (5) syphilitic cardiovascular disease. Omitting Groups 1 and 5 we have three groups of cardiorenal and cardiovascular disease, of special interest because of their frequency, association with pathologic elevation of blood pressure and because their study has tended away from the conception of renal disease being solely responsible for hypertension, and toward the renewal of the old conception of primary arteriolarcapillary fibrosis. Myocardial weakness as expressed by early dyspnea foretells a death by cardiac insufficiency for one half of such patients. Extreme dyspnea may be associated with pulmonary edema which is lethal in one or a few attacks. Anginoid pain forecasts that one third of the patients will succumb in an acute anginal attack; the remainder to cardiac failure. The underlying criteria in prognosis are the information derived from symptoms and objective signs. The symptoms are many and vary as the heart or renal element predominates. Periodic early morning headache means a uremic death for a large number; an apoplectic death for a somewhat less number. Nocturnal polyuria points to a uremic death. Hypertension accompanies all three groups. Although all three groups are doomed, the one with the vastly impaired elimination is doomed to a renal death and probably earlier than the other two. Dr. Paul D. White has shown pulsus alternans to be much more common than we have thought. In cardiac, vascular, and renal patients the mode of death is given and the expectancy of life is furnished by the same statistics. From the onset of the first symptoms one half will succumb during the first five years; one quarter between five and ten years, and one quarter will be living after ten years.

DISCUSSION

Dr. Joseph Sailer, Philadelphia: The importance of the prognosis in cardiovascular disease is due largely to the fact that, although the conditions are incurable, much can be accomplished by therapeutic measures for the comfort of the patient and the prolongation of life. Differential diagnosis here is in degree rather than in the kind of the disease, and in this differential diagnosis of degree Dr. Talley has properly laid stress on blood pressure, colorimetric tests of the functional capacity of the kidneys and graphic methods of recording the heart action. These methods, however, are not absolute. The increase or decrease in the functional capacity of the kidneys, the rise or fall of arterial tension and possibly the modification of the heart tracing are more significant of the probable course of the case than any single observation.

Dr. H. B. Allyn, Philadelphia: The cause of the disease has much to do with the prognosis. Lesions resulting from an acute infection often remain quiescent for many years and the patient is not much worse. I have seen within a few days a patient who was left with aortic insufficiency from scarlet fever when 3 years old and who is now approaching 50. Her heart has needed little attention for fifteen years. On the other hand, when the lesion is a myocardial degeneration, the prognosis is much worse. Dyspnea, its degree and the readiness with which it is induced, is often of more value in prognosis than any physical sign.

Dr. H. A. Hare, Philadelphia: The more experience one has with cases of cardiovascular disease the more cautious is he in prognosis. While pulsus alternans is of grave import it is not unusual to see a patient with this symptom live several years. In reaching a prognosis in cardiac disease we must study the patient as a whole and not be content with examinations of the heart, even if these examinations are made with instruments of precision.

The Heart of the Athlete; Its Prospect and Protection

Dr. Robert N. Willson, Philadelphia: Two vital questions immediately involved in a study of the wisdom or physical unprofitableness of college and schoolboy competitive athletics are: (1) the ultimate (postgraduation) result of public competitive athletics on the physical health and lives of the participants; (2) the possibility of determining the genuine physical integrity of the proposed participant or his lack of the same, especially with respect to his heart. In recent years there have been many deaths among former athletes. I know of not one instance of recovery from a major infectious disease in an athlete, except in the typhoid epidemic at Easton. Here a number of undergraduates, presumably not yet shorn of their resisting forces, made a successful fight and recovered. We must remember that the normal heart will not tolerate repeated insults sustained in the strain of training and final competition without the loss of recuperative power. Latent athletic injuries would seem to explain the tendency of the strong and robust to die, while the less powerful win out against infectious disease. A still more radical evil is the encouragement offered by college and university to the schoolboy to emulate his college brother in competitive athletics. I stop short of advising against active competition as the Germans have. I am simply pointing to sign boards written in bold letters. Trainers should be taught just what the collapse of today means in the future of the athlete. Some day the college authorities must of necessity conclude that no form of athletic event is sane that demands of the participants the semiconscious state of heart exhaustion at its conclusion.

DISCUSSION

Dr. N. A. Stauffer: I believe in competitive sports for the same reason that I favor competition in other professions. All of the University of Pennsylvania football team are in excellent health, and records of athletes compiled by other observers do not bear out the statement that competitive sports are harmful, except to the unprepared.

Dr. Albert E. Roussel: Physicians should appreciate the value of graduated exercise throughout life, but exercise should be under supervision in selected cases.

Dr. R. N. Willson: I am not opposed to competiti athletics if they can be rendered sane. The point raised what will the athlete's heart do in the presence of systemi especially infectious, disease? I believe it is time to saf guard the hearts and vessels and lives of our boys.

Chronic Arthritis

Dr. Thomas McCrae: The etiologic factor in the great majority of cases of chronic arthritis is infection somewhere, and a knowledge of the cause is an important element in treatment. As the process is often progressive, it is the more essential to recognize this and endeavor to remove the cause before serious damage is done. This involves a thorough search for the possible source of infection and proper treatment if found. The effort to apply this etiologic therapy should be distinguished from measures which are merely symptomatic or those directed to improve the condition of joints already damaged.

DISCUSSION

Dr. A. P. Hirsh: The terms "rheumatoid arthritis" and "chronic rheumatism" should be named only to be discarded. A tentative nosology is now possible for chronic arthritic disease being based on the researches of Dr. McCrae and others in this field. Three factors involved in the definite treatment method of one group of joint infections wrongly classed "deforming arthritis" are: (1) removal of the original source of infection; (2) persistent local applications over each affected joint until all possible removable deposit is gone; (3) a systematic effort to correct the patient's general metabolism. Removal of the causative infection implies an exhaustive differential diagnosis. It is to the local treatment methods that attention is especially directed, the most efficient of which is the high pressure, small volume and low frequency static wave current sent through 22-gage flexible metal plates closely fitting the involved joints. The static indirect sparks are also applied between these joints. Of the several modalities no single one will suffice but their intelligent combination will bring success in the treatment of that opprobrium of our calling, deforming arthritis.

The Tertiary Manifestations of Syphilis as Seen in a General Medical Ward

Dr. John H. Musser, Jr.: The study is based on the results of the Wassermann test on every case of chronic disease coming into the men's medical service at the Presbyterian Hospital in the last four months, excluding the frank pneumonia and typhoid fever cases, and necessarily those dying, or leaving the ward before there was time for the test. It was found that one fifth of patients with chronic disease had syphilis. The following conclusions may be drawn: 1. A large percentage of cases of chronic disease is dependent on a syphilitic infection. 2. It is impossible always to detect such cases of syphilitic infection without a Wassermann reaction. 3. Owing to the importance of diagnosing such cases which show syphilitic infection, a Wassermann test of the blood serum should be made in every case of chronic disease admitted to a general medical ward.

Dr. Joseph Sailer: That many forms of chronic disease are dependent on a syphilitic infection which does not manifest itself in the usual way is the experience of all of us. Of two such patients both physicians, one suffered merely from malnutrition and indefinite digestive disturbance for which there was no adequate explanation. The Wassermann was positive. Two weeks after the first injection of salvarsan he gained ten pounds and has since remained well. The other physician suffered merely from an irritative dry cough of the most persistent character. He was the father of three healthy children. There were none of the ordinary manifestations of syphilis. A positive Wassermann suggested the use of salvarsan and the cough stopped almost immediately after the first intravenous injection. Assuming that only 10 per cent. of the population suffers from syphilis, which, based on our laboratory reports is a modest number, at least 9,000,000 people suffer from it in the United States. It is fair to conclude that in the majority the manifestations are so obscure that there is no suspicion of its existence.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

September, XVIII, No. 2, pp. 145-327

1 Development of Venous Sinuses of Dura Mater in Human Embryo. G. L. Streeter, Washington, D. C.
2 Origin of Renal Artery in Mammals and Its Anomalies. J. L. Bremer, Boston.
3 Some Characteristics of External Ear of American Whites, American Indians, American Negroes, Alaskan Esquimos and Filipinos. R. B. Bean, New Orleans.
4 *Origin of Blood and Vascular Endothelium in Embryos without Circulation of Blood and in Normal Embryo. C. R. Stockard, New York.

4. **Origin of Blood and Endothelium.**—According to Stockard in most embryos the earliest blood cell formation occurs in the yolk-sac blood islands. The cells in these islands continue to divide until they become surrounded by endothelium, then the yolk-sac blood islands lose their hematopoietic function and become a vascular net through which the blood circulates. The liver now takes up the rôle of harboring dividing blood cells within its tissue spaces, when these spaces become vascularized by endothelium; here again the blood cells no longer multiply but merely circulate. Finally, in the mammalian embryo, one organ after another ceases to offer the necessary harbor for dividing blood cells, until the red bone marrow is the only tissue presenting the proper relationship of spaces and vessels, and here alone the erythropoietic function exists to supply the red blood cells for the entire body circulation. The red blood corpuscles are always produced so as to be delivered into the vessels and thus soon occupy an intravascular position, while the white blood cells arise and remain for some time among the mesenchymal tissue cells in an extravascular position. Lymphocytes and leukocytes along with the invertebrate amebocytes are all generalized, more or less primitive, wandering cells and are almost universally distributed throughout the metazoa.

Erythrocytes are highly specialized cells with a peculiar oxygen carrying function due to their hemoglobin content. In contrast to the universal distribution of the leukocytes the erythrocytes are only found in the vertebrate phylum, except for a few cases existing in some of the higher invertebrate groups. Yet even in these particular cases the oxygen-carrying blood cell never presents the typically uniform appearance of the vertebrate erythrocyte. The facts presented seem to indicate that vascular endothelium, erythrocytes and leukocytes, although all arise from mesenchyme, are really polyphyletic in origin; that is, each has a different mesenchymal anlage. To make the meaning absolutely clear, Stockard considers the origin of the liver and pancreas cells as parallel, as both arise from the endoderm but each is formed by a distinctly different endodermal anlage, and if one of these two anlagen is destroyed the other is powerless to replace its product.

American Journal of Medical Sciences, Philadelphia

October, CL, No. 4, pp. 469-624

5 *Gastro-Enterostomy; Study of One Hundred Cases as Compared with Similar Number of Cases of Pyloroplasty. J. M. T. Finney and J. Friedenwald, Baltimore.
6 *Prolonged Fasting in Diabetes. F. M. Allen, New York.
7 *Present-Day (Allen) Treatment and Prognosis in Diabetes. E. P. Joslin, Boston.
8 Relative Pulmonary Insufficiency (Graham Steel Murmur). J. Sailer, Philadelphia.
9 Soy Bean and Condensed Milk in Infant Feeding. J. Ruhräh, Baltimore.
10 *Study of Splenic Enlargement in Early Syphilis. U. J. Wile and J. A. Elliott, Ann Arbor, Mich.
11 Chronic Lead Poisoning in Guinea-Pig; with Special Reference to Nephritis, Cirrhosis and Polyserositis. W. Ophüls, San Francisco.
12 *Appendicitis as Sequela of Tonsillitis; Report of Cases. H. B. Anderson, Toronto.
13 Case of Ligation of Portal Vein in Suppurative Portal Phlebitis. E. Beer, New York.
14 Report of Three Cases Resembling Pseudosclerosis and Progressive Lenticular Degeneration. W. B. Cadwalader, Philadelphia.
15 Value of Rectal Feeding. H. Adler, Baltimore.
16 Intracranial Telangiectasis; Symptomatology and Treatment; Report of Two Cases. E. Sachs, Washington, D. C.
17 *Respiratory Signs and Symptoms in Trichinosis. G. R. Minot and F. M. Rackemann, New York.
18 *Test of Myocardial Efficiency, with Review of One Hundred and Twenty-Seven Cases. H. Schoonmaker, Clifton Springs, N. Y.

5. **Gastro-Enterostomy.**—The largest proportion of cases in the series studied by Finney and Friedenwald in which gastro-enterostomy was performed occurred between the thirtieth and sixtieth years, while the largest proportion of cases in which pyloroplasty was performed occurred between the thirty-fifth and fiftieth years. The duration of the symptoms in the gastro-enterostomy cases varied from one month to nineteen years, while the duration of symptoms in the pyloroplasty cases varied between one and one-half months to twenty-five years. In the gastro-enterostomy cases the symptoms appeared in the following proportions; pain in 90 per cent.; vomiting in 65 per cent.; hematemesis in 23 per cent.; melena in 44 per cent.; retention in 36 per cent.; while in the pyloroplasty cases pain was present in 92 per cent. of cases; vomiting in 64 per cent.; hematemesis in 21 per cent.; melena in 46 per cent.; retention in 42 per cent. In the gastro-enterostomy series the ulcer cases are arranged as follows: There are 46 cases of gastric ulcer, 38 duodenal ulcers. In the pyloroplasty cases there were 55 cases of gastric ulcer and 32 duodenal ulcers. In 67 of the gastro-enterostomy patients operated on for obstruction 44 were due to gastric ulcer, 14 to duodenal ulcer, and 9 to adhesions, while pyloroplasty was performed for obstruction in 64 instances; for gastric ulcer in 51, for duodenal ulcer in 7, and in 6 for adhesions.

In the gastro-enterostomy cases secondary operations were performed in four instances to correct immediate difficulties, while in the pyloroplasty cases secondary operations were required in the same number of instances for a similar purpose. After gastro-enterostomy satisfactory results were secured in 82 per cent. of cases, and unsatisfactory in 18 per cent., while pyloroplasty was immediately successful in 90 per cent. of cases and unsatisfactory in 10 per cent. There were seven deaths, following immediately on the operation of gastro-enterostomy, while but five deaths followed pyloroplasty. Of the seventy-seven cases of gastro-enterostomy followed during the first year of the operation the results were satisfactory in 84.4 per cent. and unsatisfactory in 15.6 per cent., while of the eighty-two cases of pyloroplasty the results were entirely satisfactory in 93.9 per cent., and unsatisfactory in 6.1 per cent. Of the gastro-enterostomy cases, numbering seventy-four, followed after the first year of operation, the results were satisfactory in 84.2 per cent., and unsatisfactory in 15.8 per cent., while of the pyloroplasty cases, numbering seventy-eight, the results were satisfactory in 93.6 per cent., and unsatisfactory in 6.4 per cent. The end results in the gastro-enterostomy cases showed a percentage of 77.2 per cent. of satisfactory recoveries, while the pyloroplasty cases showed a percentage of 88.6 per cent. It is quite evident from this study that the immediate as well as the final results are clearly in favor of pyloroplasty. The only indications in favor of gastro-enterostomy are, in those instances in which there is an inability to mobilize the duodenum when adhesions are too dense, and in those cases in which there is a thickening and infiltration about the pylorus due to hypertrophic ulceration, conditions, however, which in their experience occur but rarely.

6. Abstracted in The Journal, July 3, 1915, p. 150.

7. **Treatment of Diabetes.**—The method which has been employed by Joslin in the treatment of these cases has been similar to that recommended and described by Allen. The more closely his directions have been followed the better the patients have done. No patient has required more that five days to become sugar-free. Many patients became sugar-free after the omission of three or four meals. Patients are put to bed and the plan of treatment is carefully explained to them. They are furnished with notebooks in which answers to their questions are recorded, taught the use of a diet card and how to examine the urine for sugar with Benedict's solution. So far, no patient whom Joslin has taught to test his own urine during the last year has died. He is coming to feel that coma no longer represents the culmination of the disease, but that it is an avoidable accident.

10. **Splenic Enlargement in Syphilis.**—One hundred cases of early syphilis were studied by Wile and Elliott. Of these nine cases were primary syphilis alone, the remaining ninety-one were cases in the first months of the infection, for the most part with cutaneous or mucous membrane involvement. Of the 100 cases examined, definite splenic enlargement was found in thirty-six. The spleen was noted as being hard and firm in seventeen cases, in six it was noted as tender, and in three as soft. Of the thirty-six positive cases the general health was definitely affected in twenty-seven and the remaining nine showed no impairment of the general functions. Severe involvement of the general health was found in four cases. This entailed in one case a loss of 50 pounds in weight. Expressed in terms of percentage, 78 per cent. of those cases in which the spleen was enlarged were cases in which the general health suffered considerable deterioration. On the other hand, it must be noted that the general health was affected in 22 per cent. of the cases in which enlargement of the spleen was not present. Definite involvement of bone, including under this heading ostalgia, arthralgia, periostitis, and arthritis, was found in fifteen of the thirty-six cases, or in 41 per cent.

Of the twenty-five cases in which both the neurologic examination and the spinal fluid was studied, nineteen showed definite involvement of the nervous system. Nineteen occurred coincident with a papular efflorescence; sixteen cases of the thirty-six had associated mucous membrane findings, four had alopecia. In two out of the nine primary cases the spleen was definitely palpable; in both of these there was, as yet, no general adenitis, nor was there any sign of hematogenous infection. In twenty-seven cases in which counts were made fourteen showed a leukocytosis of over 10,000, and of forty cases in which blood examinations were made and in which no splenic tumors are demonstrable, sixteen had a leukocytosis of over 10,000. With regard to the type of the splenic enlargement, by far the largest number were firm and readily palpable. The average enlargement extended about two finger breadths below the costal margin. The softer spleens, of which there were nineteen in the series, presented fully rounded margins, and were distinctly of the type that one encounters in typhoid and other acute infections. The incidence of pain and tenderness on pressure were noted in six cases, in one, at least, pain was noted as exquisite. In this case, however, although the enlargement persisted for a considerable time, the pain was promptly relieved by the antisyphilitic treatment.

12. **Appendicitis as Sequela of Tonsillitis.**—The following points are emphasized by Anderson. The importance of bearing in mind the liability of appendicitis to follow acute tonsillitis. That the appendicular involvement may be only part of generalized infection, hence the gravity of such cases is out of proportion to the local symptoms. The tendency for such cases to be atypical in their clinical course, and after smouldering, to suddenly develop fulminating symptoms. Chronic tonsillar infections should be kept in view as the possible cause of similar infections of the appendix. That whereas at least some degree of local tenderness and rigidity are almost always to be elicited on careful examination of the abdomen in the right iliac region in acute appendicitis, in rare cases these signs may be absent.

17. **Respiratory Signs in Trichinosis.**—One hundred and two cases of trichinosis are reviewed by Minot and Rackemann. The diagnosis in 70 per cent. of these cases was made by finding the embryo in excised pieces of muscle or in the blood; in 5 per cent. no parasite was found, but the muscle showed a histologic picture of a myositis such as is found when trichinae are present; in 25 per cent. by the history, symptoms, and physical signs, and the eosinophilia which varied from 13 to 63 per cent. of the total leukocyte count. All of the 102 patients recovered except one and it should be noted that although this patient had moderate dyspnea, no abnormal physical signs in the lungs were detected. In 50 per cent. of the 102 cases studied there is no mention of cough or abnormal lung signs at any time during the course of the disease, but in the remaining 50 per cent., sixteen patients (15.6 per cent.) had cough without abnormal physical signs in the lungs, while seventeen (16.6 per cent.) had cough with abnormal lung signs, making thirty-three patients (32.3 per cent.) that had cough beginning from one to twelve days (usually two to six) after the onset of the disease and lasting three to twenty-five days or thoughout the course of the illness; eighteen patients (17.6 per cent.) had abnormal signs in the lungs without cough, making thirty-five patients (34.5 per cent.) that had abnormal physical signs in the lungs. These physical signs were present within forty-eight hours after the patient entered the hospital in thirty-two cases (31.5 per cent.), and in three cases (2.9 per cent.) within six days. The duration of these signs seemed to depend on the length of time the temperature remained elevated, the signs disappearing as the temperature fell. If the signs were slight they existed as a rule, but for a few days, and only at the height of the fever. Nine cases (8.8 per cent.) showed respiratory signs or symptoms, or both, severe enough to lead to a serious consideration or actual diagnosis of a purely pulmonary condition during the first few days the patients were in the hospital.

18. **Myocardial Efficiency.**—In the estimation of myocardial efficiency, Schoonmaker says, systolic blood pressure and pulse pressure variations together with changes in pulse rate in relation to postures and light exercise have positive value. Under the test described, an increase in systolic pressure together with a stationary or increased pulse pressure is suggestive of fairly good myocardial efficiency. A decrease in systolic pressure together with a decrease in pulse pressure is suggestive of poor to bad myocardial efficiency. In these determinations Schoonmaker takes the pulse, systolic blood pressure and diastolic blood pressure with the patient reclining and fully relaxed; then he has him walk at his ordinary speed about 75 feet and repeat the test in the standing position. This exertion is not sufficient to cause such subjective symptoms as dyspnea, palpitation, or chest pain unless the heart muscle be much impaired. It should not do this. It is a postural test plus only sufficient exertion to mildly stimulate the cardiovascular system.

American Journal of Roentgenology, Detroit

May, II, No. 7, pp. 749-792

19 Roentgen Signs of Gastrojejunal Ulcer — Some Suggestion as to Technic of Examination; Report of Two Cases. R. D. Carman, Rochester, Minn.
20 Monoosteitic Form of Paget's Disease of Bone. S. H. Hurwitz and G. L. Carr, Boston.
21 Massive Versus Fractional Dose in Roentgentherapy. A. M. Cole, Indianapolis.
22 Pulmonary Roentgenology. A. W. Crane, Kalamazoo.
23 Simple Contrivance for Reducing Pott's Fractures or Any Lateral Dislocation of Ankle Joint. A. McLean, Detroit.
24 Improvement in Technic of Gallbladder Diagnosis. G. E. Pfahler, Philadelphia.
25 Demonstration of Salivary Calculi. P. M. Hickey, Detroit.

Arkansas Medical Society Journal, Little Rock

September, XII, No. 4, pp. 91-113

26 Adiposis Dolorosa. C. H. Cargile, Bentonville.
27 Endotoxin Reaction. E. H. Martin, Hot Springs.
28 Old Man and His Prostate. J. P. Runyan, Little Rock.
29 Successful Removal of Nail from Right Bronchus of Sixteen-Month-Old Baby. R. H. T. Mann, Texarkana.
30 Measles and Its Complications; Report of Cases. E. H. Hunt, Clarksville.

Boston Medical and Surgical Journal

September 23, CLXXIII, No. 13, pp. 451-488

31 Localizing Needle Fragments in Tissues of Body by Means of Magnetism. G. H. Monks, Boston.
32 *Acute Perforation of Ulcers of Stomach and Duodenum. I. J. Walker, Boston.
33 Traumatic Rupture of Duodenum and Duodenal Fistula; Report of Case. D. Cheever, Boston.
34 Cholelithiasis. Argument for Early Operation. J. C. Hubbard, Boston.
35 Acute Pancreatitis; Case Reports. C. E. Durant, Haverhill.
36 Proper Classification of Borderline Mental Cases among Offenders. V. V. Anderson, Boston.
37 *Relation between Genetic Factors and Age of Onset in One Hundred and Fifty-Seven Cases of Hereditary Epilepsy. D. A. Thom, Palmer.
38 Case of Epidemic Typhus Imported into Central New York. I. H. Levy and J. L. Kantor, Syracuse.
39 Blood Pressure. C. Phipps, Boston.

32. **Perforation of Ulcers of Stomach and Duodenum.**—The cases on which Walker's paper is based were gathered

from the surgical records of the Boston City Hospital for the years 1905 to 1914, inclusive. The series covers seventy-eight cases, operated on by seventeen surgeons. The technic was, in general similar, and the operative results practically the same. Males were found to have been affected more frequently than females, in the proportion of 12 to 1. A definite alcoholic history was given in 66.6 per cent. Of those who succumbed 78 per cent. used alcohol in more than moderation. The site of the perforation was found to have been in the stomach in forty-two cases, and in the duodenum in thirty-six cases. The perforations of the stomach were invariably located within 1½ inches of the pylorus. In all except two, the site was on the anterior wall, and generally nearer the lesser curvature. The perforations of the duodenum were all found on the anterior wall except one.

In this series the peritoneal cavity was generally irrigated in twenty cases, with nine deaths and eleven recoveries. All the cases irrigated showed a peritonitis more or less marked. Of those cases showing peritonitis, which were not irrigated, there were nine, with five deaths. In twenty-nine cases in this series, cultures were taken from the fluid in the peritoneal cavity. Of these, fourteen showed bacterial growth, and fifteen were negative. Peritonitis was the cause of death in fourteen of the twenty-one cases. Occasionally it resulted in a localized abscess in the pelvis, right lower quadrant, or subphrenic region. Postoperative hemorrhage and shock were the cause of death in three instances. Pneumonia occurred six times, with four deaths. The other complications recorded were pleurisy with effusion, and abscess of the lung with recovery in each case. In this series of cases, there were fifty-seven recoveries and twenty-one deaths, a mortality of 26.9 per cent. Of those who recovered the average duration of the perforation was fourteen and one-half hours, and of those who died thirty-seven and one-third hours. Seventeen were operated on during the first four hours and all recovered. Of those operated on from five to twelve hours after perforation, the mortality was 17.9 per cent.; of those operated on from thirteen to twenty-four hours, 47.6 per cent.; and of those from twenty-five to forty-eight hours, 66.2 per cent. Ten were operated on after forty-eight hours, with five deaths and five recoveries. Of those who recovered each had a walled-off abscess, and not a generalized peritonitis, thus accounting for the recoveries.

37. **Hereditary Epilepsy.**—One hundred and fifty-seven cases were studied by Thom to determine the relation between the hereditary factor in the forebears and the age of onset of the epilepsy in the offspring. One hundred and twenty-six cases had direct heredity (that derived from parents or grandparents), and thirty-one cases had collateral heredity (that shown in members of the family other than parents or grandparents). There were 293 heredity defects in the 157 cases, occasionally one member of the family having more than one defect, and in other instances two or more relatives being defective. Ninety-six (61 per cent.) of the cases gave a family history of but one defect; forty-seven (30 per cent.) had two defects and the remaining fourteen cases (9 per cent.) had three or four defects. Epilepsy was met either alone or in combination eighty-eight times (57 per cent.), alcohol fifty-nine times (38 per cent.), insanity forty-three times (27 per cent.), migraine thirty-seven times (24 per cent.), and feeblemindedness sixteen times or 10 per cent. of the total number of cases. In 95 per cent. of the cases in which alcohol, migraine or feeblemindedness was the defective factor the heredity was direct, while only 56 per cent. of epilepsy and insanity came from the forebears. In seventy of the ninety-six cases, or 73 per cent., the heredity was direct, in the remaining twenty-six cases, collateral; in twenty-five of this latter group the mental defect was either epilepsy or alcohol.

Colorado Medicine, Denver

September, XII, No. 9, pp. 247-281

40 Tuberculin Treatment. J. F. McConnell, Colorado Springs.
41 Dietary Studies in Institutions for Tuberculous Patients in State of Colorado. C. D. Spivak, Denver
42 Typical and Atypical Cases of Addison's Disease. G. H. Cattermole, Boulder.
43 Death from Hemorrhage Following Peritonsillar Abscess. T. E. Carmody and W. C. Finnoff, Denver.
44 Subperiosteal Abscess of Maxillary Sinus. A. R. Solenberger, Colorado Springs.
45 Pellagra Curable Disease. M. O. Shivers, Colorado Springs.
46 Refraction and Convergent Strabismus. W. H. Crisp, Denver.
47 Case of Rocky Mountain Spotted Fever. C. H. Farthing, Meeker.

Georgia Medical Association Journal, Augusta

September, V, No. 5, pp. 105-126

48 Syphilitic Disease of Nervous System. L. M. Gaines, Atlanta.
49 Intravenous Injection of Bichlorid of Mercury in Treatment of Syphilis. J. T. Stukes, Americus.
50 Diagnosis of Syphilis and Parasyphilis from Standpoint of Laboratory. A. H. Bunce, Atlanta.
51 Syphilis of Stomach and Intestines; Report of Cases. L. C. Fischer, Atlanta.
52 Venarsen. E. P. Merritt, Atlanta.

Journal of Biological Chemistry, Baltimore

September, XXII, No. 2, pp. 241-432

53 Protein Minima for Maintenance. T. B. Osborne and L. B. Mendel, New Haven, Conn.
54 Some Products of Hydrolysis of Gliadin, Lactalbumin and Protein of Rice Kernel. T. B. Osborne, D. D. Van Slyke, C. S. Leavenworth and M. Vinograd, New York.
55 Improvements in Method for Analysis of Proteins by Determination of Chemical Groups Characteristic of Different Amino-Acids. D. D. Van Slyke, New York.
56 Oxalic Acid Producing Penicillium (P. Oxalicum). J. N. Currie and C. Thom, Washington, D. C.
57 *Hexone Bases of Malignant Tumors. R. A. Kocher, San Francisco.
58 Colorimetric Method for Determination of Phenols (and Phenol Derivatives) in Urine. O. Folin and W. Denis, Boston.
59 Excretion of Free and Conjugated Phenols and Phenol Derivatives. O. Folin and W. Denis, Boston.
60 Selective Activity of Human Kidney. O. Folin and W. Denis, Boston.
61 Qualitative (Reduction) Test for Sugar in Normal Human Urine. O. Folin, Boston.
62 On *d*-Lyxohexosaminic Acid and On a a_1-Anhydromucic Acid. P. A. Levene and F. B. La Forge, New York.
63 Action of Aseptic Tissue on Glucosone. P. A. Levene and G. M. Meyer, New York.
64 Acidity of Undiluted Normal Gastric Juice from Case of Human Gastric Fistula. M. L. Menten, Chicago.
65 Spectroscopic Examination of Color Reactions of Certain Indol Derivatives and of Urine of Dogs after Their Administration. A. Homer, Toronto.
66 Method for Estimation of Tryptophan Content of Proteins, Involving Use of Baryta as Hydrolyzing Agent. A. Homer, Toronto.
67 Relation between Administration of Tryptophan to Dogs and Elimination of Kynurenic Acid in Their Urine. A. Homer, Toronto.
68 *Dextrose and Diastase Content of Blood as Affected by Ether Anesthesia of Animals Fed on Different Diets. E. L. Ross and H. McGuigan, Chicago.
69 Peptone Hypoglycemia. H. McGuigan and E. L. Ross, Chicago.
70 Kyrine Fraction Obtained on Partial Hydrolysis of Proteins. P. A. Levene and J. van der Scheer, New York.

57. **Hexone Bases of Malignant Tumors.**—In five cases of malignant tumor examined by Kocher the quantity of hexone bases was approximately double that found in normal tissue. He says that these results suggest a new approach to the study of the cancer problem, especially as it relates to metabolism. Whether such high percentages of the hexone bases is a peculiarity of malignant tumors, or whether such an increase will be found in normal rapidly growing tissue is a problem now under investigation by Kocher.

68. **Dextrose and Diastase Content of Blood.**—Ten dogs were fed on a mixed diet for a period of about a week. At the end of that time they were anesthetized for two hours. The dextrose and diastase contents of the blood were determined at intervals before and during the anesthesia. The animals were then fed on a meat diet for a similar period, and the sugar and dextrose determinations made as before, during and after ether anesthesia, in such a way that the concentration of each could be directly compared. The results indicate the following: Ether anesthesia causes a hyperglycemia, which is greater in dogs fed on a pure meat diet than on a diet including carbohydrate. Ether itself, and not asphyxia or excitement, is responsible for the greater part of the blood sugar change. Ether anesthesia does not increase the diastatic power of the blood serum. The diastase concentration of the blood is on the average higher in animals which have been fed on a meat diet than on a mixed diet.

Journal of Medical Research, Boston

September, XXXIII, No. 1, pp. 1-145

71 *Study of Experimental Diabetes in Canine and Its Relation to Human Diabetes. J. Homans, Boston.
72 *Study of Scharlach R Reaction and of Allied Forms of Epithelial Proliferation. F. D. Bullock and G. L. Rohdenburg, New York.
73 *Primary Melanosarcoma of Suprarenals. W. W. G. Maclachlan, Pittsburgh.
74 *Filterability of Trypanosomes. S. B. Wolbach, W. H. Chapman and H. W. Stevens, Boston.
75 Cholesterol Content of Cerebrospinal Fluid. P. G. Weston, Warren, Pa.
76 *Action of Benzol. Significance of Myeloid Metaplasia by Spleen. H. G. Weiskotten, S. C. Schwartz and H. S. Steensland, Syracuse, N. Y.
77 Blood Picture of Healthy Rhesus Monkeys. J. F. Anderson, and M. H. Neill, Washington, D. C.

71. **Experimental Diabetes in Canine.**—The progress of experimental diabetes in the canine, though extremely rapid in comparison with the chronic course of diabetes in man, Homans says, resembles it in many respects. The administration of carbohydrate food intensifies the waste of dextrose and hastens the progress of both diseases. In both, the body becomes emaciated by burning as many of its own tissues as are available. In both, there is a tendency to a fatal outcome. The life of a human diabetic, however, is lengthened if the individual is kept free, by dietary measures, from carbohydrate waste (glucosuria). A similar observation is suggested by the experimental observations of Homans, and has been actually demonstrated by Allen and applied by him with encouraging evidence of success in man. Homans believes, therefore, that experimental and human diabetes are, therefore, strikingly alike. The experimental disease is due to a functional deficiency on the part of the islands of Langerhans. Diabetes of man, in the author's opinion, has in all probability a similar immediate etiology.

72. **Study of Scharlach R Reaction.**—The experimental data obtained by Bullock and Rohdenburg lead them to draw the following conclusions: The Scharlach R reaction is a reparative process, acting under conditions of prolonged disturbance of mechanical equilibrium between epithelium and connective tissue, and dependent for its inception and continuation on irritation and cell death. The contact with epithelial cells of a chemical irritant of slow absorbability and relative mild toxicity is indispensable for the production of the reaction. The chemical owes its power of inducing epithelial proliferation, not to its solubility in lipoids, but to its ability to cause continuously a certain amount of tissue death. Cessation of epithelial proliferation occurs before the absorption of the foreign substance and indicates the return of equilibrium after the performance of the new task imposed on the tissues. The character and extent of the reaction are independent of the amount of blood circulating in the tissues. The degree of reaction depends on the surface area of epithelium exposed to the irritant. Scharlach R exerts no specific stimulating action on epithelial cells. The attraxine hypothesis of Fischer is untenable. Metaplasia is a frequent occurrence in the tissue of the ear, breast, prostate, and lung, after the injection of a chronic irritant of the type used in their experiments.

73. **Primary Melanosarcoma of Suprarenals.**—A case of primary melanosarcoma, arising in the suprarenal glands is reported by Maclachlan. The tumor was bilateral and almost symmetrical. A complete necropsy was performed and a most exhaustive search failed to demonstrate any primary neoplasm in the skin, choroid, or meninges. Scattered in the deep subcutaneous tissues of the trunk and upper extremity
ere many movable nodules. No mole could be found on
mu[illegible]in, nor did any of the tumor masses present at the
found [illegible] A pigmented tumor was found in each parietal
history, sy[illegible]umerable nodules were present in the brain
which varied [illegible] pons and medulla. A single small nodule
count. All of [illegible] falx cerebri but none were found in the
should be noted[illegible] he eyes and optic nerves were carefully
dyspnea [illegible] tumor. The accessory
detected [illegible] d to [illegible] In the thorax a pig-
mention [illegible] rain [illegible] nal gland and a single
he cour [illegible] un [illegible] present in the right
sixteen p [illegible] of

lung. The heart showed the presence of multiple small pigmented tumors in the musculature of the right auricle and ventricle and in the left auricle.

Examination of the abdomen showed scattered nodules beneath the peritoneum of the abdominal wall, tissues of the mesentery, liver, bowel and other viscera. Three large masses of tumor were also found, one on each side directly above the kidney in the region of the suprarenals. Each of these masses was the size of an orange. The third mass was lying posteriorly in the midline near the cardia of the stomach and attached to the left lobe of the liver. This mass was as large as a grape fruit, and its anterior surface was adherent to the stomach along the lesser curvature. On its posterior surface the mass showed a tear in its capsule and the tumor tissue was also torn. From these parts the peritoneal bleeding had its origin. Elsewhere, the tumor, which was intensely black, was covered by a thin capsule. The great omentum contained a number of nodules the size of cherries. Many of the glands in the mesentery were invaded by black growths. Tumor masses were seen through the capsule of the liver. The gallbladder showed six small, pedunculated black tumor masses at the fundus. The bile ducts were clear. Several small encapsulated black masses about 1 cm. in diameter, were seen in the pancreas, and also in the loose connective tissue and lymph glands about the organ. A single nodule was present in the spleen.

Each kidney was of about the usual size and was surrounded by a thick layer of fat, in which were studded many small black tumors. There were no tumor masses in the kidney substance proper and both organs were normal in appearance. Over the upper pole of the left kidney and in the region of the suprarenal was a large and intensely black tumor mass, 10 by 8 by 4 cm. On section the tumor was more or less lobulated and its tissues were soft and friable. It was surrounded by a thin capsule and sharply separated from the kidney substance. No remains of suprarenal substance could be found. From the renal vein, a vessel passed over the face of the tumor and entered it at the apex. Over the right kidney, in the region of the right suprarenal, was another tumor 10 by 9 by 4 cm. This tumor mass was similar in every way to the other on the left side. The right suprarenal gland could not be recognized in the tumor mass. A black tumor mass the size of a walnut was seen projecting into the cavity from the wall of the bladder at the fundus. The genital organs, rectum, and anus were without change. Microscopically the tumor differed in no way from the usual melanosarcoma which arises in the skin or in the choroid.

74. **Filterability of Trypanosomes.**—The authors found that trypanosomes from cultures and from animal tissues are not filterable through bacteria-proof filters.

76. **Action of Benzol.**—Following the subcutaneous administration of equal parts of olive oil and benzol in rabbits, the authors found that there occurs a rapid decrease in the number of leukocytes in the peripheral circulation. Following this primary fall in the leukocyte curve there occurs a primary rise, which is, in each instance, followed by a secondary fall before a permanent rise to a normal level. The primary and secondary falls in the leukocyte curves are accompanied by a marked decrease in the percentage of polynuclear leukocytes, indicating that the polynuclear leukocytes are especially affected after the injections. Coincidentally with the primary fall in the leukocyte curve, there occurred, in two thirds of the cases, a moderate but definite fall in the erythrocyte curve. The erythrocyte curve appears to progress independently of the leukocyte curve after the primary fall, and in the majority of instances remains unaffected during the secondary fall in the leukocyte curve. This fall in the erythrocyte curve was usually followed by a rise. In rabbits in which the injections are begun two days and six months respectively after splenectomy, the leukocyte and erythrocyte curves are essentially the same as in the nonsplenectomized rabbits which receive like injections, and the duration of the periods of regeneration is essentially the same. The differential counts on the nonsplenectomized animals and those animals splenectomized two days and six

months previously, show no essential differences, and the blood-cell picture is otherwise the same.

The authors are of the opinion that these observations on the leukocyte and erythrocyte curves indicate that in the rabbit the spleen serves no essential function in the destruction of leukocytes and erythrocytes, following subcutaneous injections of the olive oil-benzol mixture, or in their subsequent regeneration. Any destructive or regenerative function that it has is quickly assumed by some other part of the body when the spleen is removed. "Myeloid metaplasia" of the spleen is of no great importance as a compensatory phenomenon, and regeneration, as represented by the blood count, takes place at least as quickly in the absence of the spleen.

Journal of Nervous and Mental Diseases, Lancaster, Pa.

September, XLII, No. 9, pp. 593-656

78 *Feebly Inhibited. Violent Temper and Its Inheritance. C. B. Davenport, Washington, D. C.

78. Feebly Inhibited.—A study was made by Davenport of 165 family histories of wayward girls in state institutions. The study of the data obtained lead the author to the following conclusions: The tendency to outbursts of temper—"tantrums" in adults—whether more or less periodic or irregular, and whether or not associated with epilepsy, hysteria, or mania, is inherited as a positive (dominant) trait, typically does not skip a generation and tends, ordinarily, to reappear, on the average, in half of the children of an affected parent. It would seem to follow from the data presented that epilepsy, hysteria, and mania are not the causes of the violent tempers, frequently accompanying them; the violent outbursts are in no clear sense the "equivalent" of these various psychoses. Rather, the violent outbursts of temper are due in all these associations to a factor that causes periodic disturbance (possibly, paralysis of the inhibitory mechanism?). This factor has the greatest effect when acting on a nervous system that is especially liable to show the other psychoses. In other words, "tantrums" are apt to be associated with these various neurotic conditions, while they have no necessary connection with them.

Kansas Medical Society Journal, Topeka

September, XV, No. 9, pp. 267-298

79 Diagnosis of Gastric Ulcer by Roentgen-Ray. R. D. Carman, Rochester, Minn.
80 Surgical Treatment of Chronic Ulcers of Stomach. E. H. Beckman, Rochester, Minn.
81 Treatment of Syphilogenous Diseases of Nervous System with Salvarsanized Serum. P. B. Matz, Leavenworth.
82 Acute Intestinal Obstruction. H. L. Charles, Atchison.
83 Progress in Infant Feeding. C. Stein, Glasco.

Lancet-Clinic, Cincinnati

September 4, CXIV, No. 10, pp. 201-220

84 Medical Inspection of Immigrants. J. H. Oakley, Washington, D. C.
85 Can Skin Diseases Be Driven into System by Local Treatment? M. Scholtz, Cincinnati.

Medical Record, New York

September 25, LXXXVIII, No. 13, pp. 509-550

86 An Adult with Status Thymicolymphaticus of Heterosexual Chromaffin Type. H. A. Houghton, Bayside, Long Island.
87 Idiopathic Hemorrhagic Multiple Sarcoma of the Skin (Kaposi). F. Wise, New York.
88 Amputation of Great Toe; Muscular Physiology of Lower Extremity. J. C. Schapps, Butte, Mont.
89 Single Stitch Appendectomy. W. F. Fowler, Rochester.
90 Neuritis, Modern American Disease. T. M. Anderson, England.
91 Treatment of Gallstone Disease. O. Lerch, New Orleans.
92 House Infection, Potent Source of Tuberculosis. I. W. Brewer, Geneva.
93 Hardening of Consumptives. H. B. Masten, Cimarron, N. M.

New York Medical Journal

September 25, CII, No. 13, pp. 641-688

94 Micro-Organismal Cardiovascular Toxins. R. N. Willson, Philadelphia.
95 Prostatic Calculus. F. Huber, New York.
96 High Blood Pressure; Treatment by Means of Muscular Relaxation. M. Grossman, New York.
97 *Improved Method for Repair of Lacerated Perineum. H. A. Bernstein, New York.
98 Two Way Stopcock for Intravenous and Intraspinal Injections and as Aspirating Syringe. J. Roby, Rochester.
99 Recent Progress in Ether Administration. W. O. Weiskotten, Utica.
100 Gallbladder Disease. M. G. Wohl, Omaha.
101 Erythremia; Report of Case. R. R. Mellon, Ann Arbor, Mich.
102 Blood Urea in Renal Conditions. A. J. Underhill, Baltimore.
103 Case of Cancrum Oris Treated with Neosalvarsan. A. G. De Sanctis, New York.
104 Harrison and Boylan Laws. M. Zagat, New York.

97. Improved Method for Repair of Lacerated Perineum.—Bernstein believes it to be a mistake in technic, to raise these flaps of mucous membrane and fascia from the center of the wound; as by so doing, the tear is deepened, the vagina is shortened, and the trauma is increased. The circulation already established is interfered with, the amount of blood and serum naturally thrown into the wound is multiplied, edema and sloughing are encouraged, infection is invited, and healing is retarded. He catches up the tissues at the entrance of the vagina, just below the lowest caruncle on either side, and separates the labia, making an incision along the crescentic border created between these points. Next, he says, separate slightly the edge of the mucous membrane from its underlying fascia. Then make an incision into the fascia, following the same line as the first one, and raise the fascia slightly from its bed. With artery clamp or suture, draw down the central point of the lower cut edge of the wound, which makes a central ridge, corresponding to the deepest part of the original tear. With blunt scissors or finger, make an opening on either side into the exposed connective tissue, leaving the center intact, and the strands of the levator muscle can easily be brought into view. Catch up the strands of the levator muscle on either side, bringing them out of the wound and together in front of the central ridge, with three or four chromic catgut sutures. Close triangles like a book, by bringing the original guiding sutures together. Suture first the vaginal side of the wound, comprising mucous membrane and fascia, from within outward, with a continuous suture. Having tightened the vaginal stitches and buried sutures, there now remains merely a straight line of fascia and skin, extending downward from the lowermost point of the vagina to the bottom of the tear, to be sutured in separate layers, with such material as the operator may select.

Ophthalmic Record, Chicago

September, XXIV, No. 9, pp. 439-490

105 Preventive and Curative Treatment of Pneumococcal Ulcer of Cornea. A. M. Ramsay, Glasgow.
106 Case with Foreign Body Located in Lens. F. W. Alter, Toledo.
107 Progress in Treatment of Cataract in India. H. Smith, Amritsar, India.
108 Report of Case of Mirror-Writing. F. P. Calhoun, Atlanta, Ga.
109 Errors of Refraction and Their Average Frequency. A. C. Durand, Ithaca, N. Y.
110 Unusually Happy Result Following Removal of Intra-Ocular Foreign Body which had been in Eye Nearly Four Months. C. R. Elwood, Menominee, Mich.

Providence Medical Journal

September, XVI, No. 5, pp. 237-292

111 Chronic Acid Gastritis, Gastric Erosions and Ulcerations. A. M. Burgess, Providence.
112 Prostate. J. E. Kerney, Providence.
113 Importance of Early Diagnosis in Gynecologic Surgery. W. L. Chapman, Providence.
114 Carelessness in Physical Examinations for Life Insurance. W. H. Peters, Providence.

Washington Medical Annals

September, XIV, No. 5, pp. 281-296

115 Case of Thrombosis of Coronary Artery. B. M. Randolph, Washington, D. C.

West Virginia Medical Journal, Wheeling

September, X, No. 3, pp. 73-108

116 Clinical Study of Uterine Hemorrhage. T. A. Ashby, Baltimore.
117 Glaucoma. J. L. Dickey, Wheeling.
118 Diagnostic and Therapeutic Value of Roentgen Ray. R. H. Pepper, Huntington.
119 Pulmonary Tuberculosis; Diagnosis and Treatment. E. F. Peters, Maybeury.
120 Evolution of Surgery. G. A. MacQueen, Charleston.
121 Plea for Justice to Patient. W. R. Hudson, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

September, XII, No. 141, pp. 257-288

1 Education of Children with Defective Vision. To be continued. N. B. Harman.
2 Lymphocytomatosis or Lymphoblastomatosis, Especially of Kidneys. F. P. Weber.
3 *Congenital Heart Disease and Ulcerative Sore Throat. J. D. Rolleston.

3. **Heart Disease and Ulcerative Sore Throat.**—In the heart of a male infant, aged 11 months, who died from bronchopneumonia, the following anomalies were present: (1) Transposition of the great arterial stems, the aorta arising from the infundibulum of the right ventricle and the pulmonary artery from the left ventricle. The walls of the right ventricle were considerably hypertrophied, being almost as thick as those of the left. Both ventricles entered into the formation of the apex. (2) Marked deficiency of the interauricular septum, which was represented by a narrow band 1.5 cm. long by 0.5 cm. broad. The foramen primum lay anterior to it, and posteriorly there was a widely patent foramen ovale. (3) An interventricular foramen, 1.2 cm. in diameter in the "undefended space." (4) Stenosis and hypoplasia of the pulmonary artery, which had only two cusps. No gross changes were found in the other organs.

British Medical Journal, London

September 4, II, No. 2853, pp. 353-388

4 Educational Number.

Dublin Journal of Medical Science

September, III, No. 525, pp. 161-240

5 Acidity and Alkalinity as Applied to Physiology; Theory of Colored Indicators. W. G. Smith.
6 Creatin and Creatinin. B. A. McSwiney.

Glasgow Medical Journal

September, LXXXIV, No. 3, pp. 161-239

7 Medical Conditions in Glasgow One Hundred Years Ago. A. J. Ballantyne.
8 Hematuria; Its Causes and Diagnosis. D. Newman.
9 Use of Pituitary Extract in Obstetric Cases. W. D. Macfarlane.

Indian Medical Gazette, Calcutta

August, L, No. 8, pp. 281-320

10 Results of Treatment of Sixty-Nine Cases of Cholera by Rogers' Method. J. A. Sinton.
11 Morphin Injector's Septicemia (Whitmore's Disease). H. H. G. Knapp.
12 Outbreak of Anthrax. McCombie.
13 Year's Surgery at Secunderabad Civil Hospital. C. H. Brodribb.
14 Surgical Notes from Madras Hospital. W. J. Niblock.
15 Florence's Reaction—Neglected Test for Seminal Stains. S. N. Goré.
16 Case of Raynaud's Symmetrical Gangrene. K. T. Vora.
17 Progressive Muscular Dystrophy. N. L. Mookerjee.
18 Pocket Electroscope. F. D. Bana.

Journal of Laryngology, Rhinology and Otology, London

September, XXX, No. 9, pp. 329-384

19 External Operation on Frontal Sinus. R. H. Skillern.
20 *Shoulder-Arm-Hand Syndrome of Paranasal Sinus Disease. J. C. G. Macnab.
21 Herpes Zoster Oticus Combined with Recurrent Laryngeal Paralysis. D. McKenzie.
22 *Acute Ulcerative Tonsillitis Associated with Virulent Pyorrhea Alveolaris. A. Ryland.

20. **Shoulder-Arm-Hand Syndrome of Paranasal Sinus Disease.**—Macnab reports three cases presenting the shoulder-arm-hand syndrome described by Bliss. They occurred in males between the ages of 20 and 40, and all complained of the shoulder-arm-hand pain. One was sent on account of tonsillar pain of two years' duration, the upper limb pain having lasted over three years. Two of the patients had also occipital pain. The nasal cavity showed in one case septal deviation to the affected side with a crowded middle turbinate, and a faint trace of mucopus in the olfactory cleft. In the other two cases there was enlargement with polypoid degeneration of the mucous lining of the middle turbinate, but in these cases little pus was detected anteriorly even after shrinkage with epinephrin. However, all had sufficient evidence for an exploration of the posterior ethmoids and sphenoids which showed that the main pathologic condition was enlarged cystic cells easily broken down and lined with unhealthy and diseased mucous membrane. Exenteration of the posterior cells as completely as possible was carried out, while the whole anterior wall of the sphenoid was removed. Within a comparatively short time all acknowledged that their symptoms were decidedly better. It is difficult to account for this referred pain, at least anatomically, but that it does occur is evident from the reported cases.

22. **Ulcerative Tonsillitis Associated with Pyorrhea Alveolaris.**—Ryland's patient complained of sore throat, of sudden onset and of five days' duration. There was excavation of tissue in three or four separate and distinct areas on the buccal surface of each tonsil. The ulcerated edges were clear cut, but irregular, and surrounded a greyish sloughing base. The neighboring inflammatory areola was only slightly marked. There was no edema, little pain, and the fauces, palate and uvula were free from inflammatory change. The tonsillar lymphatic glands on each side were slightly enlarged. The nose revealed an extreme anterior deviation of the cartilaginous septum to the right side, probably of traumatic origin. The patient was a mouth breather. Syphilis was denied. The Wassermann test was not carried out. Solution of silver nitrate, 20 per cent., was applied daily to the ulcerated areas, which under this treatment began to improve, and healed almost completely by the seventh day. On the sixth or seventh day of treatment, there suddenly appeared an acute, virulent and rapidly progressing septic invasion of the gums of both upper and lower jaws. The gums rapidly became soft, spongy, and tender. Pus was seen to be freely exuding from between them and the teeth. The temperature rose.

There was headache, malaise, the patient was toxemic, and the decision was almost made to remove freely the infected teeth. Pure phenol and other remedies were used locally without effect. Eventually under the influence of hydrogen peroxid the infection left the mouth almost as suddenly as it had appeared. The pyorrhea lasted for eight days. No mercury or other antisyphilitic remedies had been given. A bacteriologic examination of the alveolar exudate during the height of the infection revealed a pure growth of a long-chained Gram-positive streptococcus, of unusually large size as regards the cell bodies. With methylene blue, there was definite bipolar staining. No cultural examination was made from the original lesion, but it would appear highly probable that the same organism was responsible for both the tonsillar and alveolar infections. A point of interest is the extreme rapidity with which the organism surrendered to hydrogen peroxid.

Lancet, London

September 4, II, No. 4801, pp. 529-586

23 Leprosy. C. M. O'Brien.
24 Phantom Aneurysms. S. West.
25 Treatment of Gunshot Wounds of Femur by Modified Thomas' Splint. C. Wallace and B. C. Maybury.
26 *Case of Undulant Fever Treated by Autogenous Vaccine. S. A. Owen and H. B. Newham.
27 *Use of Quinin in Treatment of Experimental Gaseous Gangrene. K. Taylor.
28 *Agglutination Reactions of Blood of Soldiers Inoculated Against Typhoid. D. I. Dakeyne.
29 Brain Lipoid as Hemostatic. A. D. Hirschfelder.
30 Economy in Food During War. A. K. Chalmers.

26. **Autogenous Vaccine in Undulant Fever.**—In the case cited by Owen and Newham an autogenous vaccine was prepared and an initial dose of approximately 200,000,000 organisms was administered on December 4. No ill effects followed the administration of this dose, and on the sixth it was seen that the temperature had fallen to normal, and with the exception of a slight rise to 99 F. on the evening of that day and two subsequent rises to 99, it remained practically at the normal point until December 12. It then commenced to mount again in the typical manner of undulant fever until the fifteenth, when a second dose of the vaccine was given (200,000,000), and up to Jan. 4, 1915, the temperature, beyond a few slight rises to about 99.2 remained fairly normal, and the patient showed marked improvement in his general condition. A third dose of vaccine was administered on December 24, as the temperature was a little irregular.

The patient expressed himself as feeling well as a result of the injections. Sweating was absent; he increased in weight and had a general feeling that he was improving markedly. On January 4 a fourth dose of vaccine was given, but on the fifth the temperature suddenly rose, accompanied by rigor, to 105, and a typical attack of lobar pneumonia developed. (At this time there were three acute cases of pneumonia near him in the ward.) The temperature fell by lysis and remained somewhat irregular till January 26 when it finally came down to normal and remained so until the patient's discharge on April 7. In all only four doses of the vaccine were administered. In view of the known inefficacy of ordinary medicinal preparations to in any way alleviate the symptoms or control the progress of this disease it is satisfactory to record that in this case improvement was obtained by the use of an autogenous vaccine. Previous reports of treatment with stock vaccines have not been encouraging.

27. **Quinin in Experimental Gaseous Gangrene.**—The results of Taylor's observations may be briefly summarized as follows: *A.* Quinin has shown a marked bactericidal activity against the gas bacillus. 1. It has inhibited its growth in vitro, in which it was ten times as effective as phenol. 2. It has reduced the mortality from gaseous gangrene in animals from 100 to 41 per cent. *B.* Quinin has shown strong laboratory evidence of value as a general antiseptic. 1. Its general bactericidal power was higher than that of phenol. It was especially effective in a menstruum of pus. 2. It did not damage healthy tissue in local injections of effective concentrations. It is known to produce local anesthesia, frequently a desirable result. 3. It produced no symptoms of intoxication in the animals treated. It was used in hypertonic solution. 4. It showed a strong antitryptic action in vitro. On the evidence of these experiments a 1 per cent. solution of quinin hydrochlorid is now being tried by Taylor for the treatment of gaseous gangrene and other infections. A report on the result of its use will be published later.

28. **Agglutination Reactions of Blood of Soldiers.**—The preliminary inquiry made by Dakeyne of which this paper gives a summary, deals chiefly with the power which the blood of persons inoculated with dead typhoid bacilli has to agglutinate the *Bacillus typhosus* and some allied bacilli and is based on the examination of 280 soldiers who had received one or more injections of antityphoid "vaccines" within the previous twelve months. The tests were made according to the Delépine method, with dilutions of approximately 1:20 in current work, controlled, when thought desirable, by further tests with exactly measured 1:30 dilutions. The time limit was in all cases two hours. The serums were tested against a typical *Bacillus typhosus,* also against *Bacillus paratyphosus* B, and a *Bacillus enteritidis* (7,160) obtained recently from a typical case of food poisoning. The men examined were under treatment in the Manchester military hospitals for either wounds or illness.

Over 80 per cent. of cases gave a definite reaction, while 16.4 per cent. gave no reaction. Further, a man inoculated twice has a much greater chance of developing and retaining a reaction than one inoculated only once. There is a gradual diminution in the reaction as the result of the lapse of time. This is especially marked at the end of the eighth month. Only one case out of nineteen examined within a month of inoculation was found negative. This man had been inoculated once only and his serum, though giving no reaction with the *B. typhosus* used, gave a marked reaction with a strain of the *B. paratyphosus* B. There was no history of paratyphoid infection. If this case be excluded, all those examined within a month of inoculation gave a reaction. It appears that after the end of the first month the reaction is liable to disappear rapidly. Seven men were examined who had not been inoculated within a year. Three, who had been inoculated from twelve to eighteen months previously, were negative; three others, inoculated once each, fourteen, twenty-four and forty-five months previously, respectively, gave strong reactions. One man inoculated five years before, gave a slight reaction. This suggests to Dakeyne that individual peculiarity may have an effect deserving consideration.

Archives de Médecine des Enfants, Paris

August, XVIII, No. 8, pp. 405-460

31 *Spastic Rigidity in Infants. J. Comby.
32 *Effectual Action of Fuchsin in Treatment of Impetigo and Suppurative Skin Disease in General. C. Ferreira.
33 Lymphogranulomatosis in Boy of Five. (Maladie de Sternberg.) Blanc.
34 Tuberculosis of the Liver in Infant Under Four Months. H. Barbier.
35 Congenital Deformity in Lower Segment of Spinal Cord. (La myelodysplasie de Fuchs.) J. Comby.

31. **Spastic Rigidity in Children.**—Comby is convinced that Little's disease can be traced to syphilis in some cases, to birth trauma in others, or to acute encephalitis, primary or secondary to infectious disease. In other cases its origin is unknown. He compares here the clinical pictures in thirteen cases of the typical form of Little's disease, seven of spastic rigidity entailed by acute encephalitis, and eighteen of obstetric origin.

32. **Fuchsin in Treatment of Pyodermitis.**—Ferreira has been much impressed with the benefit from local application of fuchsin in a number of cases of impetigo, intertrigo and other rebellious skin affections in infants. The details of twelve cases are given.

He uses the ordinary bacteriologic fuchsin stain, Ziehl's carbol-fuchsin solution, which he prepares by dissolving 1 part fuchsin in 10 parts alcohol, with 5 parts phenol and 100 parts distilled water. He has used this in hundreds of cases and never noted any signs of absorption of phenol, the urine never showing any disturbance in color or composition. With this technic there is no need for a dressing. The fuchsin mixture is applied on cotton to the crusts, pressing it into each after all loose and friable parts of the crusts have been removed with sponges dipped in a 1:1,200 solution of zinc sulphate or its equivalent. The crusts absorb the fuchsin mixture and harden, forming an impermeable red varnish. It is applied anew each day and the crusts gradually grow smaller and smaller. The only drawback is the possible staining of the linen.

Presse Médicale, Paris

August 30, XXIII, No. 40, pp. 321-332

36 *Lesions of Trunk Nerves in War. V. (Les lésions des gros troncs nerveux des membres par projectiles de guerre. Les différents syndromes cliniques et les indications opératoires.) Dejerine and J. Mouzon.

36. **Wounds of Trunk Nerves.**—Professor Dejerine, Mme. Dejerine and J. Mouzon here present the fifth instalment of their extensive study of gunshot and shell wounds of trunk nerves in arms and legs, the syndromes resulting and the indications for operative treatment at the time or later. They are in charge of a hospital specializing in treatment of such cases. The wounded do not reach this hospital until about six weeks after the injury, and the writers say that until at least this interval has elapsed, the neurologic findings are not conclusive for or against operative measures. They discuss in this instalment what they call the dissociated syndromes, comparing the clinical with the operative findings in cases from their service and deducing the indications for operation. The general diagnosis is also discussed, the sources of error, the objective symptoms, modification of the reflexes and the changes in the tissues and in the response to electric stimuli, concluding with a discussion of the technic, showing the procedures to be commended and those to be shunned, with concrete instances. The article is illustrated. In certain cases the symptoms of compression soon after the injury subsided spontaneously in a few weeks, to a complete cure by the end of a few months. The trauma must have caused the compression and, when this ceased to act, repair started at once. This is very different from permanent compression or secondary compression, for both of which operative relief is indispensable. The Society Proceedings also contain a detailed summary, by the same writers, of their experiences with forty-two cases of wounds of the spinal cord. With an injury of this kind, they say, the best time for operative treatment is between the fifteenth and the thirtieth days if operative intervention is required. Before this, the shock and the lesions in the

vicinity blur the differential picture, and later than this bladder infection becomes troublesome and cicatricial changes impede restoration of function.

Berliner klinische Wochenschrift

August 16, LII, No. 33, pp. 865-884

37 Tetanus. (Klinische und therapeutische Erfahrungen über den Tetanus.) B. O. Pribram. To be continued.
38 Intravenous Treatment of Typhoid with Sensitized Bacilli Emulsion. F. Meyer.
39 *Appendicitis and Typhoid. G. Wolfsohn.
40 Operations on Soldiers from Standpoint of Regaining Military Efficiency. (Zur Frage des operativen Eingriffes bei Heeresangehörigen.) P. Weimann.

39. **Typhoid Localizing in the Appendix.**—Wolfsohn has had a number of men sent to the base hospital in his charge with the diagnosis of appendicitis. The men had not been taken sick suddenly, but for some days or weeks had felt depressed and ailing, sometimes with headache and pains in the limbs, and always with diarrhea and abdominal pains. The men had been taking castor oil or opium for the diarrhea but it returned after the medication, and blood had been noticed in the stools in some cases. The aspect is more that of health than usual with appendicitis, but the region of the cecum is tender although the abdominal wall over it is not rigid but quite soft. Bacteriologic examination of stool, urine and blood for typhoid bacilli is constantly negative. He removed the appendix in ten of twelve such cases and all the symptoms subsided at once, and in ten or twelve days the men were entirely well. The lesions in the appendix were never very pronounced, but in a number of the cases typhoid or paratyphoid bacilli were cultivated from the inner wall of the appendix although none could be found in the blood, urine or stools. In two cases the diagnosis was acute appendicitis and the appendix presented the usual lesions of this and contained typhoid and colon bacilli, streptococci and staphylococci. All the men had been systematically inoculated against typhoid, and Wolfsohn is convinced that this had rendered the tissues so resistant to typhoid infection that the typhoid bacilli could find no lodgment except in the appendix. It is possible that typhoid bacilli may lurk in the appendix, as we know they do sometimes in the gallbladder, without causing appreciable symptoms.

Deutsche medizinische Wochenschrift, Berlin

August 26, XLI, No. 35, pp. 1025-1056

41 *Deposits of Coal Dust in the Intestines. (Kohlenstaubablagerungen im Darm.) O. Lubarsch.
42 *Improved Technic for Bacteriologic Diagnosis of Cholera. H. Aronson.
43 *Diagnosis of Heart Disease by Usual Methods of Examination. (Die Diagnostik der Herzerkrankungen mittels der in der Praxis üblichen Methoden.) H. Rosin. Commenced in No. 34.
44 *Typhoid Paralysis. (Lähmungen nach Typhus.) J. Zadek.
45 Roentgen Diagnosis of Perforation of Intestines. H. Popper.
46 *Ovariotomy During Pregnancy. F. Unterberger, Jr.
47 *Iodin-Guaiacol-Glycerin Treatment of Erysipelas. E. Szecsy.
48 Tuberculosis at Shanghai. H. Dold.
49 Splint for Fracture of Humerus. (Innenschiene bei Oberarmbruch.) L. Engelhardt.
50 Treatment of Abdominal Wounds. (Zur Behandlung der Bauchschussverletzungen im Felde.) W. von Brunn.

41. **Deposits of Coal Dust in the Intestine.**—Lubarsch found macroscopic deposits of coal dust in the Peyer's patches of a man of 60. This pseudomelanosis might very readily have been mistaken for relics of blood accumulations, and it is in this way that such cases have been interpreted in the past. But Lubarsch presents evidence as to the true coal-dust nature of the deposits, especially their localization exclusively in the lower Peyer's patches of the ileum to 1.10 m. above the valve; their color, shape and chemical behavior, and the frequency of this finding when systematically sought for, regardless of inflammation, hemorrhages or other morbid processes. Since he has been examining for it systematically he has found it in 31.2 per cent. of 280 cadavers: in 6 from 2½ to 6 years of age; 6 from 10 to 20; 8 from 20 to 30; 14 from 30 to 40, and the others above this age. He also found similar deposits in the bowels of a guinea-pig. In a number of th[illegible]vers there was but little tendency to anthracosis in [illegible] For these and other reasons enumerated he [illegible] there can be no doubt that the coal dust gets into the villi by being swallowed. The findings sustain the assumption that infection with tuberculosis occurs both by way of inhalation and the food.

42. **Improved Technic for Cultivating Cholera Germs.**—Aronson's method is based on the specific splitting of cane sugar added to an Endo plate, and the ability of cholera germs to proliferate in mediums too alkaline for colon bacilli. The technic is described in detail and the method styled the easiest and the most certain means at our command for detecting cholera germs, especially in carriers and in comparatively symptomless cholera.

43. **Diagnosis of Heart Disease.**—In concluding this long review of the diagnosis of heart disease by the general practitioner, Rosin says that the old and tried methods of examining for heart disease have lost none of their importance in comparison with the newer methods. But a thorough examination now should include certain of the newer methods, especially measurement of the blood pressure, palpatory percussion, Roentgen examination and the Wassermann test. Electrocardiography is also useful, affording information not obtainable in any other way. But the findings have not been interpreted to date with sufficient accuracy to justify recommending to the general practitioner the purchase of the extremely expensive apparatus required for it.

44. **Post-Typhoid Paralysis.**—Zadek reports the case of a boy of 9 convalescing from typhoid who developed right hemiplegia with loss of reflexes. It was evidently of cerebral origin, the work of the typhoid, and it rapidly improved under electric treatment, massage and baths and by the end of the month had retrogressed almost entirely.

46. **Ovariotomy During Pregnancy.**—Unterberger reports the details of eight cases in which ovariotomy was done on pregnant women. In one of the women it was bilateral, and abortion followed in this case, but the pregnancy was not interfered with in the other cases. He advises to postpone the ovariotomy until the third or fourth month if possible, as there is less danger of interrupting the pregnancy after this.

47. **Treatment of Erysipelas.**—Szecsy has been much pleased with the efficient action of a mixture of 10 parts each of guaiacol and tincture of iodin in 80 parts glycerin, applied as a lininent to the erysipelatous region. It has merely a symptomatic action, but in this it far surpasses all other measures of which he knows.

Medizinische Klinik, Berlin

August 15, XI, No. 33, pp. 905-932

51 *Urology and War. (Urologische Erkrankungen im Kriege.) R. Oppenheimer.
52 Hernias from Industrial and Other Accidents. E. Schepelmann.
53 *Autoserotherapy of Gangrenous Venereal Ulcer, etc. (Behandlung des Ulcus molle gangraenosum und anderer Ansteckungskrankheiten mit Eigenstoff, Eigenserum oder Eigenblut.) W. Treupel.
54 Mixed Infection with Typhoid. H. Koenigsfeld.
55 *Diabetes Insipidus After Injury of Skull. F. Kleeblatt.
56 The Blood Picture in Smallpox. (Zum Blutbilde der Pocken.) J. Falk.
57 Side Suture of Subclavian Artery. (Seitliche Naht des Durchschusses der Arteria subclavia.) H. Hans.
58 First Aid for Fractured Bones. (Erste Versorgung bei Knochenbrüchen.) H. Spitzy and A. Hartwich.

51. **Urology on the Firing Line.**—Oppenheimer remarks that there has been no great war since the modern methods of urologic investigations have been introduced, and he has utilized the present war to collect data in this line. The summaries of sixteen cases are given to illustrate the various types encountered, both of wounds and of urologic affections such as are observed at any time but for which the stress of the campaign induces a predisposition and creates exciting causes. He says in conclusion that in calculating the indemnity, he estimates that the loss of one kidney reduces the earning capacity on an average about 45 per cent.; a traumatic detrusor paralysis, from 50 to 80 per cent.—on account of the danger of secondary pyelonephritis—and permanent incontinence, from 70 to 80 per cent.

53. **Autoserotherapy for Gangrenous Venereal Ulcer.**—Treupel relates that in two progressive cases of this kind, long uninfluenced by vigorous local measures, injection of the patient's own serum seemed to arrest the gangrenous

process, and start the patient on the road to recovery. In the first case the gangrenous ulcer scabbed over and the scab was thrown off the fifth day. Three injections of the patient's own active serum were given, in the course of four days, the amounts ranging from 10 to 24 c.c. In the second case four times these doses of serum or 100 c.c. of the blood were given and prompt benefit was apparent, the gangrene promptly healing. Febrile skin affections were likewise favorably influenced. In one case of petroleum eczema, with temperature of 40.4 C. (nearly 105 F.), the fever rapidly dropped and the skin affection retrogressed after a venesection of 50 c.c. of blood and intravenous injection of 200 c.c. of the patient's own blood. The cure was completed by two further injections in four days. The work issues from the university clinic for skin diseases at Jena, in charge of Spiethoff. He has found this "own blood" or "own serum" beneficial also in treatment of catarrhal febrile sore throat and prostatitis, typhoid and tetanus.

55. **Diabetes Insipidus After Trauma of the Skull.**—Kleeblatt relates that a robust young mechanic was rendered unconscious for ten minutes when a wheel from a pulley fell on his head from a height of over 9 feet. The base of the skull was fractured, and the third day afterward symptoms of central severe diabetes insipidus appeared and have persisted since. Roentgenoscopy reveals nothing abnormal; the hypophysis region in particular seems intact. The specific gravity of the urine showed no rise even under long abstention from water and ingestion of salt. Hypophysis preparations induced a transient increase in the total concentration power, but the general health did not benefit by this. The blood findings are within normal range. During periods of abstention from drinking water, the output of urine materially surpassed the intake. The blood became much more concentrated also.

Münchener medizinische Wochenschrift, Munich

August 24, LXII, No. 34, pp. 1141-1172

59 *Disturbances in the Circulation from Effect of Shock Toxins. (Durch "Schockgifte" erzeugte Zirkulationsstörungen.) H. Mautner and E. P. Pick.
60 *Technic for Rendering Agar Fit to Use More than Once in Bacteriologic Research. (Regenerierung des verbrauchten Endoagars.) H. Mohorcic.
61 *Acute Yellow Atrophy of the Liver in Syphilis. Bendig.
62 Technic for Cooling Roentgen Tubes. (Die Kühlung der Röntgentherapieröhren mit siedendem Wasser.) Bucky.
63 Blood from Slaughter-House as Food Product. (Verwendung von Schlachtblut zur menschlichen Ernährung.) F. Hofmeister. Commenced in No. 33.
64 Emergency Sterilization of Drinking Water. (Zur Entkeimung von Trinkwasser im Felde.) W. Kruse. (Einfaches, kolloidchemisches Verfahren zur Entkeimung von Oberflächenwasser mit Beziehung auf die Trinkwasserversorgung im Felde.) M. Strell.
65 Blood Charcoal in Treatment of Typhoid and Paratyphoid. (Ueber Tierblutkohle.) P. Como.
66 Recurring and "Resting" Infection After Gunshot and Shell Wounds. (Zur Frage der rezidivierenden und "ruhenden" Infektion bei Kriegsverletzungen.) Most.
67 Abdominal Wounds. (Behandlung der Bauchschussverletzungen im Felde.) A. W. Meyer.
68 Psychiatry on the Firing Line. (Kriegspsychiatrische Erfahrungen aus der Front.) E. Wittermann.
69 Artificial Limbs and Aids. (Zur Frage der Armprothesen.) H. Spitzy. (Vorschlag zur Herstellung eines künstlichen Armes.) P. Bade. (Stützverbände im Felde.) F. Hübler.
70 Microphotography. (Praktische Winke für Mikrophotographie.) Stange.

59. **Cardiovascular Disturbances from Shock Toxins.**—Mautner and Pick report research on dogs, cats and rabbits, studying the drop in blood pressure after intravenous administration of some albumin cleavage product. The shock action seems to be in the nature of a spasm of the nonstriated muscle in general and particularly of the musculature of the vessels of the intestines, liver and lungs. Drugs which dilate the vessels, such as amyl nitrite, arrest the spasmodic contraction and thus check the shock action. This explains the favorable influence of caffein in conditions resembling shock, as after antityphoid inoculation in exceptional cases. Its vasodilating action counteracts the spasm from the shock toxins.

60. **Regeneration of Agar.**—Mohorcic says that in the course of the eleven months of war the supply of agar-agar has been mostly used up, and hence he has been evolving a technic to render it possible to use agar-agar over and over again in bacteriologic research.

61. **Acute Yellow Atrophy of the Liver in Syphilis.**—Bendig's patient was a robust young woman nine months pregnant. She was given mixed mercury and salvarsan treatment on account of a primary syphilitic lesion. The first two injections of salvarsan caused no disturbance but she vomited after the third, and two days later symptoms of acute yellow atrophy developed, fatal within two days. He reported in 1908 an almost identical fatal case in a young woman but this was long before salvarsan was invented so that the salvarsan need not be incriminated in the present case.

Therapeutische Monatshefte, Berlin

August, XXIX, No. 8, pp. 421-476

71 *Recent Progress in Treatment of Liver, Gallbladder and Pancreas Disease. (Fortschritte in der Behandlung der Leber-, Gallen- und Pankreaskrankheiten.) Hochhaus.
72 *Treatment of Gynecologic Hemorrhage. G. A. Wagner.
73 *Cholera Infantum and Other Severe Diarrheas in Infants. (Behandlung des Brechdurchfalls und der ruhrartigen Erkrankungen im Säuglingsalter.) L. Langstein.
74 *Roentgen Rays in Treatment of Acne. Dössekker.
75 Aims and Methods of Psychotherapy. J. H. Schultz.
76 Operative Treatment of Wounds of the Skull in War. (Operierte Schädelschüsse.) Kalkhof.
77 *Trademark Names and Substitutes. ("Ersatz"-Waren und Warenzeichengesetz.) W. Heubner.

71. **Present Status of Disease of the Bile Apparatus and Pancreas.**—Hochhaus regards cirrhosis of the liver as the result of a number of interacting causes which explains why it is so refractory to treatment. Referring to the bile secretion, he calls attention to recent study of the secretion of bile in a man with a fistula into the liver (Ignatowsky). Animal albumin stimulated the production of bile much more than vegetable albumin, and fat even still more. Mineral waters, on the other hand, checked the secretion of bile. These findings confirm empiric experiences. Reach reported last year that morphin, epinephrin, pilocarpin and atropin increased the tonus of the sphincter at the papilla of Vater and thus retarded the outflow of bile, while papaverin relaxed this sphincter. Hence the latter might relieve in jaundice in which spasm of this sphincter is a factor. In the diagnosis of pancreas disease, an excess of creatin or fat in the stools is easier to determine and more decisive than the ferment content. Hustin's recent research has confirmed the statements as to the stimulating action of pilocarpin on the pancreas. He found (experimentally) that this action was not direct but occurs only when part of the intestine is functionally capable. When this is the case, pilocarpin intravenously stimulates pancreatic secretion. Sodium bicarbonate seems to have the opposite effect, depressing pancreas secretion. Wilbrand concludes from his study of this subject that sodium bicarbonate can be relied on to check the external secretion of the pancreas while the internal is probably stimulated by it.

72. **Gynecologic Hemorrhage.**—Wagner remarks that the introduction of organotherapy and of radiotherapy have contributed to do away with hysterectomy for genital hemorrhage. We have learned that what used to be called hypertrophic and hyperplastic endometritis is in reality not endometritis at all, but a physiologic change in the uterus lining which occurs periodically under the influence of the functioning of the ovaries. We have learned further that true endometritis does not induce hemorrhage.

The physiologic menstrual hemorrhage is influenced by the behavior of the blood vessels, their innervation and the composition of their walls; by the composition and condition of the uterine musculature, and also by the condition of the blood with respect to its coagulating power. Any one of these three factors may become deranged, so that even with normal ovarian functioning there may be pathologic hemorrhage. The hemorrhage may thus be of mechanical origin or of ovarian origin, and classification of the cases points the way to effectual treatment. The mechanical group includes the cases of hemorrhage from polyps, erosions and myomas located beneath the mucosa which stretch and tear the vessels above them. Another group includes the cases of abnormal hyperemia of the uterus, from psychic, thermic or sexual causes, or from high blood pressure, tight lacing or constipation. Other groups of mechanical hemorrhage include the cases of defective contraction of the uterus from muscular insufficiency; arteriosclerosis or syphilitic changes in the vessel walls; deficient coagulating power; constitutional disease; and, finally, the peculiarly persisting tendency of hemorrhage with extra-uterine pregnancy.

In contrast to all these so-called mechanical groups, are the hemorrhages for which ovarian functioning can be incriminated. The typical forms of this occur in puberty and at the menopause. When the ovaries are dying off, they are like a lamp that is going out but flickers up now and then. The Abderhalden test confirms the dysfunctioning of the ovaries in these cases, as also in hemorrhage with chlorosis and obesity, but above all with myomas and affections of the adnexa. In certain cases the hemorrhage may be traced to abnormal functioning of some other of the glands with an internal secretion, closely connected with the ovaries. Sehrt has differentiated a group in which the hemorrhage is the result of thyroid insufficiency; the blood in these cases coagulates abnormally fast. The list of these groups closes with those in which there is actual hyperplasia of the uterine mucosa for which the ovaries are directly responsible, and the cases of necrotic processes from incomplete menstruation.

Classifying the case as mechanical or of ovarian origin, and in one of the above subgroups, points the way to causal and effectual treatment. The mechanical require local measures, and the first step is to exclude cancer. Unless this can be done with certainty, no attempts at conservative measures are justified. Here the curet is almost indispensable. The old idea that curetting would put an end to the tendency to hemorrhage, as a new mucosa grows out, has been proved erroneous—the new mucosa is under the influence of the ovaries as much as the old. Permanent benefit was realized in less than 10 per cent. of 600 curetted cases on record. Cauterization is equally futile, as a rule, but tamponing the uterus is still, as ever, a reliable symptomatic measure to arrest bleeding. Removal of the cause may require cold sitz baths, digitalis if there is cardiovascular derangement, or calcium lactate by the mouth to tranquillize the overexcitable nervous system which is keeping up the active hyperemia in the genital organs. When the uterus is unduly flabby, ergot may help. Something of the kind given a few days before the period may ward off the tendency to excessive hemorrhage; electricity may also prove useful.

Organotherapy or radiotherapy or both are now at our disposal for the cases of ovarian origin, and give most gratifying results. They have aided in classifying cases, as when a case proves refractory to radiotherapy, for instance, this proves that some other factor is at work, unsuspected syphilitic changes or a submucosa site of a myoma, permitting, then, proper treatment. The effect of radiotherapy is prompter and more certain the nearer to the extinguishing of ovarian function. The great drawback is the danger of overlooking cancer. A number of such mishaps have been reported. Wagner applies radiotherapy by the close, filtered, crossfire technic. Loose has reported excellent results in juvenile menorrhagia from small doses (2 or 3 X per ovary) with medium hard tubes, applied during the hemorrhage. After three or four exposures the hemorrhages are kept within normal range. The pathologic elements in the ovary seem to be corrected by this mild radiation while the normal elements do not feel its influence.

73. **Cholera Infantum.**—Langstein insists that with albumin milk correctly given complete recovery may almost be guaranteed. The infant with diarrhea and vomiting is given nothing but tea for from twelve to twenty-four hours, no longer, and then the albumin milk is commenced, not over 5 gm. ten times a day, with 3 per cent. of a maltose-dextrin mixture. The amount of albumin milk is increased by 50 gm. each day until the daily ration totals 300 gm. After the weight has become stationary, carbohydrates can be added up to 5 per cent. of the maltose-dextrin mixture. With a child over 3 months old, 1 or 2 per cent. flour or oatmeal can be added. He warns against giving too small a daily ration; especially serious is an undue restriction of carbohydrates. This is particularly dangerous for infants who have reached the stage of "decomposition." The nature of the albumin milk enhances the tolerance for carbohydrates. The lack of adequate carbohydrate in the food soon becomes manifest in the decline in the weight; it drops abruptly and the child collapses. The lack of carbohydrates is the more dangerous the more atrophic the child, the less reserves of carbohydrates it has to draw on. Even if the diarrhea keeps up, the ration must be increased as above described or there is grave danger of inanition.

One must be firmly convinced of the wisdom of keeping on with the albumin milk in this way, realizing that even frequent passages on albumin milk do not aggravate the condition, and that the bowel functioning will return to normal sooner or later. When the diarrhea and loss in weight have ceased, then we are less liable to disagreeable surprises and mishaps than with any other form of artificial feeding. Even if the diarrhea returns, hold steadfast to the albumin milk and the 3 per cent. carbohydrate. Any repetition of the starvation diet or withdrawal of carbohydrates may bring severe disturbances and collapse to the sick infant. A return to the starvation diet within a week may prove promptly fatal. Langstein discusses further the mishaps liable from infection or from return of the alimentary disturbance.

Albumin milk is not so uniformly effectual in dysenteriform diarrhea as in cholera infantum. Whey seems to act better, diluted half and half with oatmeal gruel. After the starvation period he gives 50 gm. of the whey and increases by 50 gm. daily with equal amounts of oatmeal gruel. As improvement sets in, 3 per cent. of a dextrin-maltose preparation can be added. He advises to make the whey artificially from the milk. Kaolin and charcoal have been given to infants as well as to adults, but no decisive judgment as to benefit from them can be drawn as yet. Their depressing action on the digestive ferments must be taken into account. The whey permits the diseased large intestine to recuperate while it supplies the salts needed by the organism. The prognosis on whey is not unfavorable, provided there is no complicating digestive nutritional disturbance. When the child has both cholera infantum and enteritis, he advises combating the former first and foremost by keeping the child on albumin milk.

74. **Roentgen Treatment of Acne.**—Dösseker says that experience is demonstrating that repeated small doses of the rays, not strong enough to induce appreciable reaction in the skin, or a single large dose with a reaction, seem to be able to modify the epidermis, that is, the sebaceous glands to such an extent that the tendency to acne dies out. His communication is based on large numbers of cases but he does not cite statistics nor bibliographic references, his aim being merely to recall attention to Roentgen treatment of acne, with his personal endorsement of it. Fortunately he adds, its efficacy is greater in acne spread over a larger surface, with numerous pustules, than in the less disfiguring, torpid type.

77. **Trademarks and Protected Names.**—Heubner reiterates that "protected" names of drugs sooner or later become the generally accepted term for the drug in question, the general term in common commercial and medical use. Legal authorities differ as to when this transformation takes place, but the fact that it does occur sooner or later is now generally accepted. Another instance of it, he relates, is seen in the labels of the drugs now supplied to the German army hospitals. Instead of the official name, hexamethylenamin, for example, the drug is labeled "Substitute for urotropin," *Ersatz für Urotropin, Ersatz für Aspirin*, etc. Tablets are supplied stamped in the same way, "Ersatz für Antipyrin, 0.5." The wrapper bears the full title, "Hexamethylentetramin, 0.5—Ersatz für Urotropin;" with the place, "Garnison-Lazarett Magdeburg."

A medical officer at the front, without books, without a pharmacist, obliged to decide in a hurry, knows what action he can expect from "urotropin" for instance, while the official name, indicating its chemical composition, has no concrete association in his mind with the clinical condition for which he wants the special action of the drug. Heubner adds that this has all been said a hundred times and just as often vehemently denied by the interested parties, but the fact remains that trade-marked names become in time the common name of the articles.

Wiener klinische Wochenschrift, Vienna

July 8, XXVIII, No. 27, pp. 725-752

78 *Occupational Changes in the Teeth. (Berufsmerkmale an den Zähnen.) M. Kraus.
79 Nonsensitized Vaccine in Treatment of Typhoid. E. Csernel and A. Marton.
80 Cholera Germ-Carriers. (Cholerabazillenträger und ihre epidemiologische Bedeutung.) Stein.

July 15, No. 28, pp. 753-780

81 Cosmetic Considerations in Surgical Work. J. Sternberg.
82 Vaccine Therapy of Typhoid. R. Löwy, F. Lucksch, E. Wilhelm and E. Paulicek.
83 Pathology of the Nervous System in War. (Kriegsverletzungen und -erkrankungen des Nervensystems.) J. Donath. Commenced in No. 22.

July 22, No. 29, pp. 781-804

84 An Expert in the Use of Artificial Hands and Feet after Loss of Both Hands and Both Feet. R. Hofstätter.
85 Treatment of Erysipelas. O. Kren.
86 Congenital Hernia of the Diaphragm. (Zwerchfellbrüche.) R. Monti.
87 Garlic in Treatment of Catarrhal Enteritis. (Allium sativum als Therapeutikum bei infectiösem Darmkatarrh.) E. Marcovici.

July 29, No. 30, pp. 805-828

88 Modern Electromedicine in War Hospitals. J. Zanietowski. Concluded in No. 31.
89 Functional Heart Disturbances. T. Szasz.
90 Charcoal in Sterilization of Drinking Water. R. Kraus and B. Barbara.
91 Vaccine Therapy of Typhoid. F. Deutsch.
92 Pathology and Treatment of War Hematothorax. J. Tornai.
93 Erythromelalgia with Spontaneous Gangrene in Young Man. G. Bikeles and K. Radonicic.

78. **Occupational Deformity of the Teeth.**—Kraus gives illustrations of a number of typical changes in the teeth induced by factors connected with the occupation. Candy-maker's caries is one. The sugar dust in the air settles on the teeth and the acids generated from the sugar eat away the enamel below. There is thus a shallow pocket hollowed out in the upper part of the front of each front tooth. Workers with hydrochloric acid display a characteristic irregular necrosis of the teeth, after a stage of brownish spots on the teeth. It is a molecular necrosis, beginning at the cutting edge and working downward. The teeth thus are soon gnawed away by the process. Workers on metal may develop a dirty green coating on their teeth which long persists if the teeth are not well cared for: Shoemakers may wear away a groove in the edge of the front teeth where they hold the peg or nail. The pronounced arch in the upper front teeth of glassblowers is readily explained by the tube they use, and the small groove in the front teeth of tailors and seamstresses by their habit of biting off the thread. The illustrations given confirm Kraus' statement that the changes in the teeth described are typical enough to indicate the occupation.

Zeitschrift für Tuberkulose, Leipzig

August, XXIV, No. 4, pp. 241-320. Last indexed Sept. 11, p. 986

94 *Factors which Cooperate in Inducing Tuberculous Apical Lesions. IV. (Betrachtungen über die Entstehung der tuberculösen Lungenspitzenphthise.) C. Hart.
95 Improved Technic for Isolating and Cultivating the Tubercle Bacillus. S. A. Petroff (Saranac Lake).
96 The Newer Medicinal Preparations and Foods Advocated in 1914 in Treatment of Tuberculosis. G. Schröder.
97 Tuberculosis in India. E. Wilkinson.

94. **How Apical Processes Originate.**—Hart presents an array of arguments to sustain his views regarding the mechanical predisposition to apical disease from stenosis of the superior aperture, to which Freund called attention long ago. Hart has encountered a number of young cadavers with marked anthracosis in the apex but no signs of tuberculosis. There was always something abnormal in the aperture, however, preventing free ventilation of the apex beneath; dust accumulates here although the tubercle bacillus has not happened to find a lodgment here. He has also encountered in a few cadavers an actual groove in the lung below the apex, a subapical pressure groove, but this is rare. He restricts the term phthisical thorax to the form with stenosis and deformity of the aperture. This is distinct from the thorax of general asthenia and also from the acquired paralytic thorax in the emaciated and cachectic.

The primary defective development of the aperture may be merely one localization of a more or less general physical inferiority. The manifestation at the aperture of this physical inferiority is liable to invite tuberculous disease of the apex; when manifested elsewhere it is liable to induce a predisposition to other affections, gastric ulcer, for example. Hence he thinks it is too sweeping to call this type of chest the phthisical thorax, as the individual with this form of chest does not inevitably develop tuberculosis. It would be more correct to call it the asthenic thorax or some similar term which would express that it is a primary manifestation of a constitutional tendency.

Zentralblatt für Gynäkologie, Leipzig

August 28, XXXIX, No. 35, pp. 611-626

98 *Exclusive Radiotherapy of Uterine Cancer. (Dürfen wir operable Uteruskarzinome ausschliesslich bestrahlen?) S. Flatau.
99 *Treatment of Inveterate Prolapse of the Uterus. O. Walbaum.

98. **Exclusive Radiotherapy of Uterine Cancer.**—Flatau has not operated on cancer of the uterine cervix since 1913. The proportionate number of women still living and cured under radiotherapy alone is larger than he could ever report before with abdominal operations for cancer of the cervix. It is now beyond question that an incipient cancer focus can be destroyed by radium without leaving a trace. But certain experiences have suggested the possibility that although the primary focus may thus vanish without leaving a trace, there is a possibility that metastases may develop at remote points, far beyond the scope of the rays. Time alone can tell whether radiotherapy will oust surgery from the arena of treatment. The surgeon and the radiotherapeutist can go on working, each in his sphere; in time comparison of the results will show which is superior.

99. **Treatment of Inveterate Prolapse of the Uterus.**—Walbaum makes a septum in the vagina as a support leaving two narrow channels each side which permit natural drainage of the uterus. The septum is made by joining the exposed bladder to the exposed rectum, the exposed area in each drawn up with circular stitches to provide a better hold. The perineum is also reenforced and sutured close up to the mouth of the urethra. He has applied this technic with most gratifying results in cases of extreme prolapse, primary or recurring.

Policlinico, Rome

August 29, XXII, No. 35, pp. 1161-1196

100 Abstention from Drainage of Septic Wounds in War. (Cura delle ferite di guerra settiche senza drenaggio.) L. Isnardi.
101 Inguinal Adenitis from Physical Overexertion. (Adenite inguinale da sforzo.) R. Sacco.

Riforma Medica, Naples

August 28, XXX, No. 35, pp. 953-980

102 Study of the Virulence of Pneumococci in the Sputum of Pneumonia Patients, and Its Bearing on Isolation. C. Ninni.
103 Pathogenesis of Nephritis in Infectious Disease; Toxic Influences Main Factor. P. Montuschi.

Russkiy Vrach, Petrograd

XIV, No. 23, pp. 529-552

104 Chloroform of Russian Manufacture. P. I. Tikhoff and L. M. Sicheva.
105 Pathogenesis of Werlhof's Disease. M. M. Schugurova.
106 *Functional Relations between Organs; Changes in the Thyroid after Removal of the Suprarenals. E. E. Malovichko.
107 *Abdominal Fremitus. D. S. Schchetkin.

No. 24, pp. 553-576

108 *Cultivation of Leukocytes Outside the Body. P. P. Avroroff and A. D. Timofejevsky.
109 The Physician in Relation to the School. B. I. Vorotinsky.
110 Cranioscopy for Locating Foreign Bodies (Bullets) in the Head. A. T. Berdiaeff. Commenced in No. 21.
111 Non-Surgical Treatment in Military Surgery. G. I. Higier.

No. 25, pp. 577-600

112 Observations During Aviation. *I. S. Tsitovich.*
113 *Treatment of Russian Trypanosomiasis. *V. L. Yakimoff and V. I. Vassilevskaya.*
114 *Cases of Loss of Vision from Eau de Cologne, Denatured Alcohol and Similar Substitutes for Whisky. *A. A. Yakovleva.*
115 *Periodical Vomiting. *A. I. Nikulin.*
116 *Grafts of Umbilical Cord to Cover Defects in Buccal Mucosa. *V. A. Perimoff.*

106. **Functional Relations Between Thyroid and Suprarenals.**—Malovichko studied the changes in the suprarenals after removal of the thyroid, and vice versa. Of fifty dogs operated on for these studies eight succumbed; the rest were killed and the examination was done immediately afterward. It was found that after removal of the suprarenals, destructive lesions could be demonstrated in the thyroid in the form of degenerated epithelium, and changes in the colloidal substance and interstitial tissue. Removal of the thyroid together with the parathyroids does not seem to affect materially the suprarenals, but some fine structural changes in the cells could be demonstrated in them.

107. **Abdominal Fremitus.**—Schchetkin found abdominal fremitus in the right iliac region in patients suffering from chronic peritonitis with adhesions. This may be diagnosed clinically from the presence of this fremitus. The patient is asked to answer some questions and, while he is talking, the examiner's hand applied to the right iliac region experiences a manifest thrill or fremitus. He did not find this fremitus in acute peritonitis, or in any other abdominal affection, such as dropsy, but only in chronic peritonitis accompanied by solid connective tissue adhesions which transmit the fremitus of the diaphragm to the right iliac region.

108. **Cultivation of Leukocytes Outside of the Body.**—Avroroff and Timofejevsky succeeded in cultivating white blood corpuscles outside the body according to Carrel's method. The mononuclears of normal blood they found are able in the mediums to proliferate through karyokinesis, and to become transformed into different shapes, such as hypertrophied, giant and protoplasmic cells. This ability of the mononuclears to undergo such changes confirms the theory of their active rôle in the healing and regeneration of tissues with transformation into different forms such as polyblasts and giant cells. Cultivation experiments may thus shed further light on the question of the origin of the eosinophil granules. This article is illustrated.

113. **Treatment of Trypanosomiasis.**—Of various remedies used by Yakimoff for treatment of mice injected with trypanosomes from camels and donkeys in the Turkestan region, he found salvarsan and antimony trioxid most effective.

114. **Poisoning from Substitutes for Liquor.**—Yakovleva had the opportunity of examining eighty patients poisoned with cologne water, denatured alcohol, furniture polish, varnish or similar substitutes the patients had been using in the place of ordinary liquor. The general symptoms of denatured alcohol poisoning are depression instead of excitation of the nervous system, pain in stomach and chest, and vomiting. In addition there was amblyopia which usually set in rapidly in a few days or weeks, with great impairment of visual acuity, frequent appearance of absolute central scotoma and concentric narrowing of the field of vision. Poisoning from wood alcohol and eau de Cologne gave the same symptoms as described in the literature from methyl alcohol poisoning. Here frequently occurs a secondary aggravation of the impairment of vision, following a temporary improvement. Another peculiarity of methyl alcohol poisoning is its cumulative action—the symptoms of poisoning developed only after repeating the dose, usually the next day. The details of the eighty cases are tabulated in full, filling three large pages.

115. **Periodical Vomiting.**—Nikulin calls vomiting periodical when it occurs at the end of the so-called periodical activity of the gastro-intestinal tract. This activity, in the form of contractions of the stomach and intestines, secretion of pancreatic juice, bile, etc., is periodically followed by stages of rest during which no secretion and no peristalsis take place. Nikulin studied the occurrence of periodical vomiting in a dog, the vomiting recurring nine times. He reports that the vomiting usually started at the end of the "period of activity or work of the stomach, and it never occurred during the period of rest." During the vomiting the quantity of intestinal secretions—which contain intestinal and pancreatic juices and bile—is increased, twice or three fold, proportional to the motor power. It is evident that the motor and secretory properties are intimately connected, the increase of one causing the increase of the other. The total amount of ferments in the gastro-intestinal contents is increased during vomiting, proportional to the amount of the intestinal mixture. Periodical vomiting has been observed in pregnancy. It displays here some of the features he found in his experiments on the dog. The Abderhalden reaction was found positive with the serum during the period of work, and negative during that of rest, indicating an increased flow of ferments into the blood. When this increase is too great, the body tries to get rid of the superfluous amount of ferments through vomiting, which is thus periodical in character.

116. **Umbilical Cord as Patching Material.**—Perimoff describes two cases in which umbilical cord was used to cover the defects in mucous membranes (scar between upper and lower jaws, and fistula under the lingual bone). The results were excellent. His previous experiments along the same line were summarized in these columns, August 14, p. 658.

Hospitalstidende, Copenhagen

August 25, LVIII, No. 34, pp. 849-876

117 Antiseptic Action of Gastric Juice Dependent on Hydrochloric Acid Content. (Mavesaftens antiseptiske Virkning.) J. P. Gregersen.

Ugeskrift for Læger, Copenhagen

August 26, LXXVII, No. 34, pp. 1369-1394

118 *Roentgen Treatment of Cancer. (Om Røntgenbehandling af ondartede Svulster.) S. and J. Nordentoft.

118. **Roentgen Treatment of Malignant Tumors.**—Nordentoft reports the further course in twenty-four cases of cancer in which courses of Roentgen treatment were applied one or more years ago. He emphasizes that a person who has had a cancer removed, or cured by other means, must keep in touch with his physician afterward, realizing that he must be kept under sharp observation for all the rest of his life. Nordentoft makes a point of continued supervision, and publishes from year to year the present status of the more interesting cases, omitting superficial cancers and recurring mammary cancers. In this communication he presents evidence that cancer of the mouth and tongue may yield surprisingly quickly to Roentgen treatment, also that metastases of malignant disease are liable to retrogress under the Roentgen rays.

The series reported here include only the cases in which Roentgen treatment has conquered new fields, namely cancer starting in the mucosa of the mouth or vulva, or deep-seated cancer, as in the pelvis, abdomen, chest or brain, or cancer of the esophagus or rectum. Even in the absolutely hopeless cases, marked benefit was apparent for a time. This was particularly striking in a case with metastasis in the lungs from cancer elsewhere. Among the patients still in good clinical health are one man of 45 with a sarcoma in the mediastinum (the last course of Roentgen treatment was given in 1911); one woman of 64 with recurring cancer of the vulva (last treatment 1913), and several with cancer of the mouth. He also gives the details of cases which proved absolutely refractory to the rays, including one of cancer of the lung. The necropsy findings are also given in the cases that have terminated fatally after the Roentgen treatment or the patients have succumbed to intercurrent disease. The cases are listed serially for this report. The following yearly communications will carry on the history of each surviving patient under the same serial number. In time the data thus accumulated for each individual case, as the years go on, will supply a basis, by comparison, for general conclusions as to the efficacy and technic of roentgenotherapy in malignant disease. He urges others to carry on similar series, reiterating that a patient cured of cancer should never be allowed to forget the need for perpetual medical supervision to detect recurrence or metastasis in its incipiency.

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SOME ASPECTS OF OPHTHALMIA NEONATORUM *

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This paper is based principally on a series of 149 cases of ophthalmia neonatorum under my charge in the contagion wards of the Massachusetts Charitable Eye and Ear Infirmary, between Aug. 1, 1913, and Oct. 1, 1914. It is not presented primarily, however, as a statistical study, or as a consideration of the whole subject of ophthalmia neonatorum, but rather of those aspects of the disease which have appealed especially to me and about some of which there is yet considerable difference of opinion. In addition, attempt has been made to bring the sociological aspect of the disease into close relationship with the clinical side.

HOSPITAL OR HOME TREATMENT

In the first place, is a baby with a severe ophthalmia neonatorum best treated in the home or in the hospital? The obvious answer is, at the hospital, if we exclude those cases occurring in well-to-do families in which it is possible to employ a capable ophthalmologist and at least one skilful nurse. Sydney Stephenson,[1] however, states that he never takes a baby into the hospital unless loss of sight is imminent, as it is not wise to wean a baby with this disease if it can possibly be avoided. Stephenson is by no means alone in this opinion. The importance of this statement must be readily appreciated when we realize the impossibility of obtaining proper ophthalmic nursing in the average family in which this disease occurs, and the great and apparent danger to every other member of the household.

Such a statement is extremely significant and can mean only one thing, that the usual hospital treatment provided for this disease is unsatisfactory, that the advantages of skilful treatment of the eyes, which, it goes without saying, all ophthalmic institutions can offer, are offset by the lack of that specialized care which is so necessary in the early days of life, and more particularly in those instances in which it is absolutely necessary to wean the infant.

The reason for Stephenson's statement lies in the fact that the mortality in cases of ophthalmia neonatorum treated in the hospital is usually extremely high. Furthermore, in many cities suitable accommodations are not provided. For instance, Holloway,[2] in a recent paper on ophthalmia neonatorum, states: "The Philadelphia hospitals have largely avoided the admission and treatment of these cases. . . . No accommodation is provided for them in the only hospital in Philadelphia devoted exclusively to diseases of the eye."

Harman,[3] in his study of the statistics of cases of ophthalmia neonatorum occurring in London in 1911, states that the general and ophthalmic hospitals had difficulty in providing for these cases. "Of the cases occurring in the practice of midwives during the year, in twelve instances mother and child were admitted to hospitals or infirmaries, and in twenty the child alone was admitted; 101 other cases were treated by the ophthalmic and general hospitals as outpatients." This series comprised at least 278 cases; the exact number is not given.

This does not mean, however, that ophthalmia neonatorum is best treated in the home, but rather that in general the hospital treatment is unsatisfactory and often difficult to obtain.

To my mind there is but one answer to the question originally propounded. In the vast majority of severe cases, ophthalmia neonatorum should be treated in the hospital, for it represents an extremely contagious disease, dangerous to the eyesight, and produces a very large amount of visual loss. It is also my contention that these cases can be handled in the hospitals with comparative safety; that is, the mortality among them will be little greater than the normal mortality among infants in the first year of life, always taking into consideration the fact that infants affected with this disease average below normal in their general vitality and that they are subjected to unusual conditions, in that the eyes must be cleansed very frequently, thus necessitating frequent handling, which would be deleterious to any normal infant. This handling, however, would be less likely to do the child harm if carried out by a nurse skilled in the care of babies than by the less skilful attendant in the home.

MORTALITY

Our figures, such as they are, tend to substantiate the views expressed. In 149 cases occurring during fourteen months, 6 babies died in the hospital. Two of these were premature, 1 died of meningitis, 1 of pneumonia and 2 of hemorrhagic disease of the new-born.

To arrive at the true mortality, however, cases should be kept under observation for a year. Of 124 cases of our series admitted between October, 1913, and October, 1914, it was possible to follow the course in 81. Of these, 3 patients died in the hospital and 4 died after their discharge. Assuming the same mortality for the 43 who could not be followed up as for the 78 (81 — 3) that could, we should expect, at the most, 3 more deaths among these, which would give a total number of 10 deaths in 124 cases (80 deaths per 1,000), an extremely good showing, and comparing favorably with the infant mortality of the city of Boston for 1914, about 103 per 1,000, which in itself was a low figure.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Stephenson, Sydney: Ophthalmia Neonatorum, London, George Pulman & Sons, Limited, 1907.

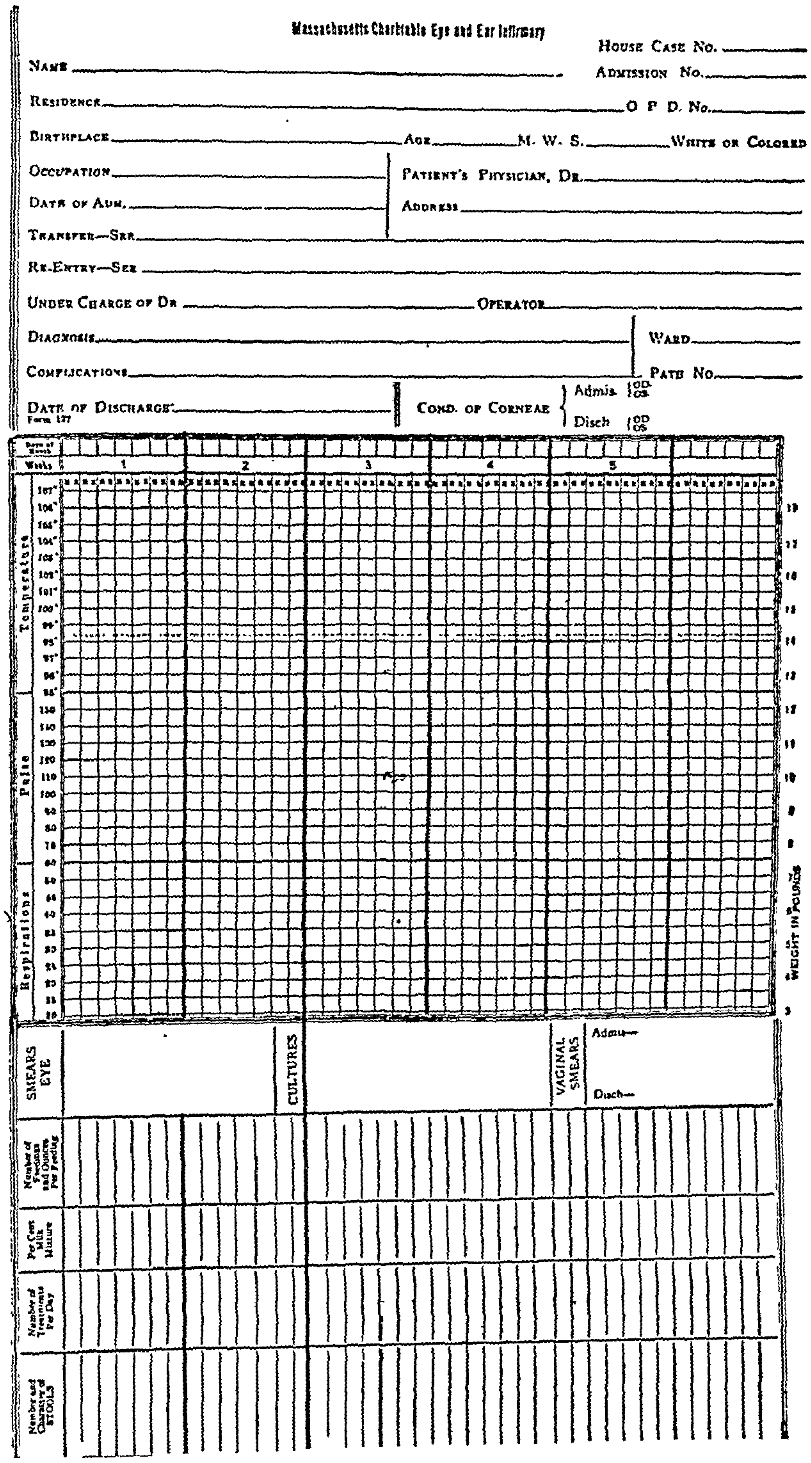
[2] Holloway: Ophthalmia Neonatorum, Ophth. Rec., December, 1913.

[3] Harman, N. Bishop: Incidence of Ophthalmia Neonatorum in London, Brit. Med. Jour., 1913, p. 1099.

Figures showing mortality in this disease are hard to obtain and are often misleading. One of our patients is of interest in this connection, a premature twin with gonorrheal ophthalmia. The eyes of the second twin were normal. The child was admitted to the hospital, the disease treated, and it was discharged from the hospital on the fiftieth day after birth. It died at home one day later, although it seemed in good condition when it was discharged. The other twin had died eleven days earlier. In spite of the handicap of the eye disease, it seems as though this child's life may have been prolonged rather than shortened by its stay in the hospital.

Among the well-to-do, with whom skilled nursing and medical attendance are a matter of course, mortality among babies having ophthalmia neonatorum must necessarily be higher than the normal mortality among babies in the same social condition. In infants of the poorer classes, however, if they be admitted to a suitably equipped hospital, the more scientific care which they receive should be enough to offset the handicap of the ocular disease, and the mortality should not be higher than the normal, and perhaps even less. It goes without saying that the most important single factor is the feeding, and to this I shall return.

An adequate system of charts and records is of great importance, so that the visiting physician may see at a glance the essential features which can be recorded about each case. A copy of our chart is appended, the general features of which we owe to Dr. F. B. Talbot of the Massachusetts General Hospital and formerly our consulting pediatrician. The credit of introducing modern and systematic methods of caring for these babies in the infirmary is largely due to him. The part of the chart relating to eyes was worked out by Dr. C. T. Porter, recently an intern in charge of these cases. This chart shows at a glance the temperature, pulse, respiration, gain or loss in weight, character of the stools, number, amount and character of feedings, number and character of eye treatments, the bacteriologic record, and the condition of the corneas at entrance and discharge.



Massachusetts Charitable Eye and Ear Infirmary

House Case No. ____
Name ____ Admission No. ____
Residence ____ O P D. No. ____
Birthplace ____ Age ____ M. W. S. ____ White or Colored
Occupation ____ Patient's Physician, Dr. ____
Date of Adm. ____ Address ____
Transfer—See ____
Re-Entry—See ____
Under Charge of Dr ____ Operator ____
Diagnosis ____ Ward ____
Complications ____ Path No. ____
Date of Discharge ____ Cond. of Corneae { Admis. {OD OS Disch {OD OS
Form 127

Days of Month
Weeks
1
2
3
4
5
Temperature
107°
106°
105°
104°
103°
102°
101°
100°
99°
98°
97°
96°
95°
Pulse
150
140
130
120
110
100
90
80
70
Respirations
60
50
45
40
35
30
25
20
15
10
Weight in Pounds
Smears Eye
Cultures
Vaginal Smears
Admis—
Disch—
Number of Feedings and Ounces Per Feeding
Per Cent Milk Mixture
Number of Treatments Per Day
Number and Character of Stools

Chart of Massachusetts eye and ear infirmary.

In regard to feeding, it was only in March, 1914, that permission could be obtained from the hospital authorities to admit the mothers of these babies whenever possible. This is now being done. In frequent instances, when the mother is unable to come permanently into the hospital, she can often come twice a day to nurse her baby. At present about two thirds of our babies receive at least part of their nourishment from maternal sources. When the mother is sick and cannot come, it is frequently possible to obtain breast-milk from her, and finally, in those cases in which the maternal milk is not available and breast-milk is a necessity, it is obtained from other institutions. For bottle-fed babies the best certified milk is provided, and the mixture is prescribed by the consulting pediatrician, who makes a regular visit twice a week and is on call at all times.

No one can deny that these babies are subjected to unfavorable conditions, for in some of our most severe cases it is necessary to cleanse the eyes every half hour during the twenty-four, and it is impossible to expect a baby to thrive under these circumstances. Here is where a question of the nicest judgment comes in; on the one hand, the eyes need the most frequent and careful cleansing, on the other hand, the premature or sickly infant needs warmth, quiet and as little handling as possible. No general rule can be laid down, except that it is probably best to err in favor of the general condition. Treat the eyes as infrequently as is consistent with safety. Watch the baby's weight. If the baby is losing ground, reduce the eye treatment even to once every three or four hours (when possible). If the baby is in good condition and stands the frequent handlings well, we may cleanse the eyes as often as is required by the severity of the disease, as shown by the amount of discharge and by the corneal conditions. Treatments of the eye, when this is possible, should never be carried out directly after a feeding, for in many instances the feeding will be regurgitated. Treat the eyes directly before the feeding, and then wait as long as possible. In the same way, the visits of the attending ophthalmologist should have regard to the time of feeding.

Finally, it should be repeated that in the zeal for frequent treatment the resisting ability of the baby must be remembered. Constant handling reduces this. The conjunctival discharge, as has been shown in a number of our cases, will persist for weeks in babies of low vitality in whom every known device of local treatment has been tried. Under careful observation as to the condition of the cornea, reduce the local treatment to once every three or four hours, and not infrequently an improvement will be noticed. The patient will begin to gain weight and the conjunctivitis will gradually subside.

PREMATURITY

Turning from the more general features of the disease, it may be of interest to take up some of the special points on which our series throws some light. Stephenson and other writers give prematurity as the chief general predisposing cause of the disease for three reasons: (1) less resistance, (2) thinness and delicacy of conjunctiva, and (3) lack of the vernix caseosa.

Just how important prematurity is in the etiology of our cases is somewhat difficult to determine. According to the information obtained from the parents and attendants in our cases, 17 were premature. In 9 of these the gonococcus was found in the ocular discharge. The weight was recorded in 110 cases; 16 patients were under 5 pounds and 11 more between 5 and 6 pounds.

MONOCULAR INFECTION AND PROTECTION OF THE SOUND EYE

Various writers say that ophthalmia neonatorum, as a rule, eventually become bilateral, though at the same time unilateral cases cannot be regarded as exactly rare. Statistics show monocular infections varying in percentage between 5 per cent. of 100 cases reported by McKenzie and Marshall, and 25 per cent. of 868 cases reported by Cohn.

In our series of 149 cases, 77 were definitely due to the gonococcus. Of these, 18 were monocular and remained so, a percentage of 23.4.

Forty-four infants out of 75 cases in which we have records on this point developed the disease in both eyes on the same day. Of the remaining cases, 18 infants developed the disease in one eye only, and of these, 8 showed evidence of conjunctivitis within three days after birth, while 10 developed it on the fourth day or later, 2 on the fifth day, 3 on the sixth, 1 on the ninth, 2 on the tenth and 2 later than ten days. It seems probable, therefore, that over one half of the monocular infections in this series were secondary and not acquired at birth. Of the remaining 13 cases the interval between the appearance of conjunctivitis in the two eyes was as follows: 11 within four days of the appearance in the other eye, 1 on the tenth day and 1 later. In no one of our cases did the infection of the second eye occur after admission to the hospital, a tribute to the efficiency of the nursing force.

The precautions taken to avoid infection are simple. The child should lie on the infected side; its hands and arms should be confined, as is the usual hospital practice with young babies; and a drop or two of protargol or argyrol may be put into the healthy eye two or three times a day. I am inclined not to attach so much importance to this last measure as to general cleanliness. The main precautions are those to be taken by the nurse. That infection does not take place is entirely due to her ever-watchful care.

BACTERIOLOGY

Occasionally an infant or adult comes to the hospital presenting the signs of a conjunctivitis, and under the microscope we find extracellular and intracellular gram-negative organisms corresponding in their morphology to the gonococcus. The patient is admitted to the wards and energetic treatment instituted, with the result that at the end of a week the eyes are nearly normal and the patient nearly ready to be discharged. Under the system of smears alone, the case would be regarded as a gonorrheal conjunctivitis.

To obtain accurate results, steps should be taken in every hospital to separate the gonococcus from the other gram-negative, biscuit-shaped diplococci, the most important of which group, from our standpoint, is the *Micrococcus catarrhalis.* This cannot be done by smears alone, and thus cultures should be taken, as the *Micrococcus catarrhalis* grows on ordinary mediums and the gonococcus does not.

In each of our cases, before admission to the hospital, two smears are now taken and several cultures made on blood serum and on hydrocele agar. The statistics shown by our cultures and smears are not of particular interest except for a few facts. From the present series, cultures were taken in 125 cases, and the *Micrococcus catarrhalis* (or some other gram-negative diplococcus, not the gonococcus) was grown three times. This shows a source of error, small but worthy of note, as Axenfeld first pointed out.

The gonococcus was found in seventy-seven of our 149 cases of ophthalmia neonatorum, and the clinical picture was characteristic. This gives a percentage of only 51.3, considerably lower than the usually quoted two thirds of all cases.

Of 1,829 cases collected by Stephenson, 65 per cent. showed the gonococcus. In but few of these, however, were careful bacteriologic examinations made and other gram-negative diplococci excluded. This figure is probably too high.

Bartels,[4] in a series of 70 cases, in which the bacteriology was carefully worked out, found gonococci in thirty-eight, or 54 per cent. He believes the gonococcus is the etiologic factor in about 50 per cent. of cases.

The striking fact, however, in my series is the presence of 56 cases in which no organisms whatever were found in the smear, although two smears were always examined, and in the case of a negative result, often several more. In several of these negative cases

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[4] Bartels: Klin. Monatsbl. f. Augenh., 1911, Part 1, p. 557.

41 cases; Haupt, 28 per cent. of 45 cases; Kroener, 25 per cent. of 62 cases; Druais, 25 per cent. of 24 cases.

Harman[3] found in a series of 231 cases of ophthalmia neonatorum of all degrees of severity, and nongonorrheal and gonorrheal cases combined, 13 cases of corneal damage, 5.6 per cent. Of the 13, 3 were blind in both eyes and 5 more blind in one eye.

In my series of 77 cases in which the gonococcus was found in the secretion, 5 patients were discharged with damaged cornea, a percentage of only 6.5.

All our patients with corneal damage have been carefully investigated, and when possible, steps have been taken to bring the guilty party to book. One physician has been prosecuted and found guilty, but appealed, and the case is not yet settled. One midwife was forced out of practice, but no further penalty was inflicted in view of her advanced age (84). One midwife was educated in her duties. In the others, either no ground for prosecution was found, or the difficulties were so great as to make conviction seem impossible. The results of this endeavor to place the responsibility are not brilliant in this series, but this method undoubtedly forms one of the most potent weapons in preventing loss of sight from this disease. It should be remembered also that in Massachusetts we are working under very favorable conditions as compared with all but a very few of the other states, as we have a good birth-reporting law and an effective law for the reporting of ophthalmia neonatorum. Moreover, we have an active Commission for the Blind, which has made it its business to see that these laws are enforced. What is needed next is greater control by the State Board of Health over the local boards, since these local boards vary greatly in efficiency.

LOCAL TREATMENT

The local treatment of ophthalmia neonatorum has occupied a large share of the attention of writers on this subject. There is nothing to be added to what has been said many times over, and indeed, no advance in this direction is to be expected until some specific drug or serum is discovered.

Various antigonococcus serums and vaccines have been used in the past, but on the whole the results have been indifferent. The latest of these, the vaccine of Nicolle and Blaizot, although heralded as a great advance, has hardly borne out the claims of its adherents. Among others, it has been used by Morax, who reports a favorable influence on the disease in a few cases and no influence in others. He would only advise employing it as an adjunct to the regular treatment with the silver salts.

In our cases the eye is cleaned as often as necessary to keep it reasonably free of pus, be it every twenty minutes or every three hours. The lids are wiped clean and then separated with the fingers; the conjunctival sac is washed out with boric acid squeezed from a pledget of cotton, several drops of one of the milder silver salts are instilled, the excess wiped away, and the lids are liberally smeared with some bland salve, such as White's ointment or boracic ointment. Injury to the corneal epithelium is most carefully guarded against. In the later stage of the disease, if the conjunctiva becomes boggy and little improvement is taking place, silver nitrate and zinc sulphate are called into use.

Regarding the silver preparation to be used in the acute stages of the disease, I believe that a nonirritating drug is indicated; that the stronger silver preparations, such as nitrate, do good in inflammations by their ability to set up a reaction and draw in protective substances from the neighboring tissues; and that their place is therefore in those inflammations in which a sufficient reaction does not already exist. This is not the case in gonorrheal ophthalmia, since the reaction is often too great (especially in the adult form) for the conjunctival circulation to take care of. Bactericidal power is of little importance, as the gonococci lie too deep to be reached by any remedy which we have yet at our disposal, and since, as I among others have shown, the germ-killing power of even the stronger silver preparations is markedly impaired as soon as they come in contact with the tissue proteins. Argyrol is, at the most, a very weak bactericide to start with.

In the present series argyrol 25 per cent. has been used almost exclusively. Probably protargol in weak solution, 2 per cent. or 4 per cent., would be equally efficacious, although its specific gravity is not so high. The controversy over the merits of the various silver salts has waged long and has not arrived at a final settlement.

For the reasons stated above, I believe that in the acute stages of the disease a mild remedy is indicated. The high specific gravity of argyrol, 25 per cent. (in the neighborhood of 1.070), may be of value in its cleansing action; it is surmised that it tends to float the pus out of the hollows of the conjunctival sac. A manifest advantage of such a solution, and one to which I have not seen reference, is the early warning given of a break in the corneal epithelium by the immediate staining of the area involved.

It is not improbable that in the past harm has been done in this disease by the use of too strong applications. It would seem that the virtue of the milder ones lies partly in their negative qualities.

It should be expressly stated, however, that the foregoing remarks apply solely to the treatment of ophthalmia neonatorum, and not to its prophylaxis, in which the nitrate is supreme.

Before discharge of gonorrheal patients from the hospital, two negative smears at an interval of twenty-four hours or over are required.

ABSTRACT OF DISCUSSION

Dr. Joseph L. McCool, Portland, Ore.: It seems to me that the best way to handle ophthalmia neonatorum depends largely on the locality in which one practices. Those of us who live on the Pacific coast do not see as many cases as do our colleagues in the East, for we do not see so much poverty and wretchedness. Furthermore, the demand being insignificant, our facilities are inadequate for the proper handling of these cases. In view of these facts it seems to me that so far as we are concerned these cases can be treated best at home with, of course, as careful instructions as we can give to those in whose care they are placed.

In considering the subject of prophylaxis, I was surprised to learn from several of our most prominent physicians whose obstetric experience is large that there is a lack of uniformity in the application of the Credé method; some of them use it only occasionally. This is to be deplored, as there can be no compromise on this question. It should be used in every case. In educating the public to report this disease, it is well to remember that we can get better results if we assure them that a large percentage of these cases are not gonorrheal in origin and should not be concealed from any sense of shame. This, I believe, was pointed out by the late Mark D. Stevenson several years ago. Dr. Derby's application of the complement-fixation test to these cases is very interesting and original, and again emphasizes the fact that it is a mistake to regard gonorrhea as a purely local disease. I am inclined to agree with the essayist in the use of mild cleansing solutions used at frequent intervals and, despite the poor bactericidal value of argyrol, to follow with the liberal use of this silver salt.

Dr. W. H. Roberts, Pasadena, Calif.: I would like to ask Dr. Derby if he has any figures showing in what proportion of cases in which ophthalmia neonatorum develops, the Credé method has been employed?

Dr. H. H. Stark, El Paso, Tex.: Dr. Derby has called to my attention a point that I have overlooked in the treatment of clinical cases. I have probably the worst class of clinical cases of any man here, all Mexicans of the lower class, people without any means, very little education and hard to control. I have probably had in the last five years between eight and ten thousand cases in the clinic; of these, a hundred to a hundred and twenty-five were cases of ophthalmia neonatorum. These cases no doubt represented only a small per cent. of the cases in our community. Those of you who are acquainted with Mexico know of the prevalence of blindness which occurs in childhood. This blindness in the majority of cases is due to this disease. It is impossible to put these patients in the hospital as the mother will not go, neither will she permit her child to go. Consequently one must rely on the treatment given at home. We therefore have adopted a routine treatment consisting of 2 per cent. nitrate of silver solution every other day, in the clinic, argyrol at home several times a day, and a wash of 1:5,000 permanganate of potash. With the use of this medicine I doubt if the child's eyes are ever opened and washed out with the permanganate solution, for it is a common thing for patients with eye trouble to come in several weeks after beginning treatment and ask for permission to wash their faces. It is an exception to have a patient admitted to the clinic in whom the cornea is not clouded. But with this inefficient treatment it is seldom that we lose an eye. Consequently I think there may exist an immunity, as suggested by Dr. Derby Recently we have proved in our clinic that there exists an immunity against syphilis, by having the Wassermann test done on fifty patients, thirty men and twenty women, complaining of no especial ailment other than minor ills, in which we found a uniformity of 65 per cent. positive. I therefore believe there may exist a partial immunity in the children against the eye infection.

Dr. Charles L. Williams, Topeka, Kan.: I have gained some valuable information from Dr. Derby's paper. I would like to say, however, that I believe in treating these patients only in a hospital. My only bad results have been when I left the patient in the home with or without the nurse. There is too much responsibility resting on the ophthalmologist to allow these patients to be anywhere except in the hospital. They are too important. I insist on the mother going there with the child. I do not use anything except the nitrate of silver, 1 grain to the ounce. It will do the work if properly used. It is to be used twice a day, and the main part of the treatment is flushing the lids. Keep the secretions thoroughly washed away by irrigations every half hour if necessary. After that applications of ice, to reduce local temperature, are comforting to the patient and retard the infection.

Dr. Edward Jackson, Denver: After seeing Dr. Derby's work in his hospital, as I did a few months ago, I was impressed with the idea that he had there worked out nearly an ideal method of treating ophthalmia neonatorum, with the hospital facilities he had and his ability to bring in the mothers at least two or three times a day to nurse the infant if not kept there all the time. But for that line of treatment you must have the hospital, together with those facilities, and so organized. A great many of these patients will have to be treated without those facilities. There should be a distinction made between the treatment under the circumstances Dr. Derby has set forth, and under other circumstances that a great many men will have to contend with.

With the child in the hospital and with efficient, experienced nurses in charge, there is no reason, certainly not in the great majority of cases, for resorting to silver nitrate or other strong applications. Regular and thorough cleansing is all that is necessary. But if the patient must be left with the parent or nurse in the home for several hours, and sometimes without the care of a nurse, then I believe the use of the silver nitrate cannot be given up. The bad results I have seen have all been due to repeating the applications too frequently. I do not refer to the weak solutions, say 1/10 grain to the ounce, but to 2 or 4 per cent., which is perhaps strong enough to use in any case. If such a solution is to be used it should be applied not more often than once in two days, or perhaps once in twenty-four hours. This, with careful cleansing, is the best thing that can be depended on in home treatment. Strong solutions I have seen used as often as once in six hours, and such treatment is certain to be followed by serious results.

Dr. Robert W. Miller, Los Angeles: Unquestionably one of the most important things is prophylaxis, and I trust that the ophthalmologists will continue to insist on prophylactic measures and work through the proper channels persistently and systematically to secure that end. I would not refer to the use of concentrated silver nitrate solutions but for the fact that I have met within the last few months a number of very capable ophthalmologists who still defend their use and employ them. The one thing we wish to avoid is corneal involvement. To my mind the use of concentrated nitrate of silver solution tends to invite corneal infection by damaging or destroying the epithelial layer. Previous statistics have indicated pretty clearly that we cannot rely on any known drug or chemical agent for the destruction of the gonococci in the deeper portions of the connective tissue. The better plan is to wait and let nature conduct, as well as she can, her campaign against these invading bodies. The keynote consists in constant, gentle cleanliness. We have had many conflicting reports in regard to the action of argyrol. Its manufacturers have told us that it is bactericidal. Others have told us it has no bactericidal effect whatever. Bruns, of New Orleans, reported a few years ago having employed argyrol in a series of cases with very gratifying results. The point of vital importance is the continuous "flooding" of the cornea and conjunctival sacs, with the 25 per cent. argyrol solution. I have had an opportunity of using it in a number of cases and have been well pleased with it. I do not speak against the use of nitrate of silver entirely. I admit its value in certain cases. I speak only against the concentrated solution, that may prove harmful to the eye.

Dr. E. C. Ellett, Memphis, Tenn.: In regard to the method of prophylaxis, I do not think we should countenance any modification of the Credé method. This should not be taken to mean that there are not other methods which are quite satisfactory, but if we present a solid front on this point it would avoid any confusion in the minds of those who are guided in these matters by the experience and advice of others, and would result in placing the responsibility for the occurrence of these cases where the responsibility belongs.

Dr. George S. Derby, Boston: I must take issue with Dr. McCool, in that I do not think it is safe to handle these cases in the home unless one has a nurse. This disease needs skilled nursing more than any other feature. More injury to the cornea is done by scratching the epithelium with the nail than in any other way. I believe it would be difficult to work out the statistics of disease after treating by Credé's method. That question is best determined by statistics obtained from the lying-in hospital.

In regard to what Dr. Williams said, I would simply like to repeat what I said concerning the value of argyrol. In addition, it is nonirritating, which is a great advantage, and secondly, it will bring to your attention a break in the epithelium when it first occurs. In reply to the question why we do not use nitrate of silver in the sound eye, I can say that under our present method of treatment the sound eyes do not become infected. Argyrol is much less irritating and we do not see the necessity of putting in a drop of silver when the argyrol does just as well. In Massachusetts the law requires physicians to report all cases of ophthalmia neonatorum immediately. One hesitates to disagree with Dr. Jackson, but after what I have seen of the treatment of ophthalmia neonatorum, I cannot help but feel that nitrate of silver is contraindicated. I do not believe nitrate of silver works as a bactericide. It does good by setting up a reaction. In diseases of this kind you have a marked reaction and you do not ned any more. Treat it mildly and you will get on better than if you put in stronger drugs. I believe thoroughly in 1 per cent. of nitrate of silver as a prophylactic.

A DISCUSSION OF THE CANCER MORTALITY

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In discussing the cancer mortality there are a number of questions which should be considered with it. While the figures which I have used are, within the limits of slight error, correct, such questions as the relation of improved methods of diagnosis to the cancer mortality, or the relation of changes in the composition of the population to the cancer mortality, must be given proper consideration in the final analysis of any cancer statistics. Whether or not these questions are factors of importance in the mortality rates of cancer is, at present, more or less a matter of personal opinion, and will remain so until through some laborious investigation their exact status will be determined.

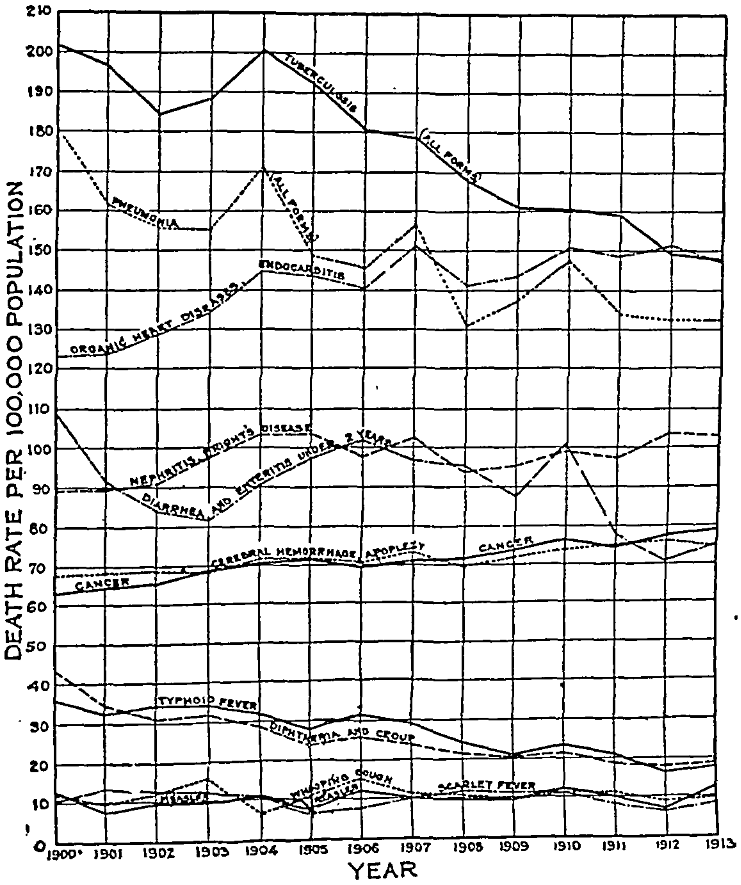

Chart 1.—Deaths per one hundred thousand from cancer and other causes, 1900 to 1913 (mortality report, census bureau).

The population figures used here were compiled from the reports of the census bureau, and the mortality figures were all taken from the report of the Division of Vital Statistics of the Census Bureau. That the mortality reports were drawn from a large portion of the population of the United States is evidenced by the fact that the registration area for deaths represented 40.50 per cent. of the population of the United States in 1900, and 58.30 per cent. in the year 1910.

In order to obtain sufficient material for several of the tables, I was compelled to confine the figures to those for the registration states, which does not include quite the population of the registration area. In the year 1900 they include 40.48 per cent. of the population of the United States; in the year 1910, 51.37 per cent. of that population. The figures and rates have been carefully compiled, and in no single year give divergences which would be considered unusual. Without further discussion at this time I will give the result of a survey of the cancer mortality for ten years in the registration area. In the registration area for the year 1913, there were 49,928 deaths from cancer. Assuming that cancer is as prevalent in that portion of the population not included in the registration area, the total deaths in the year 1913 would be 76,694.

TABLE 1.—REGISTRATION AREA OF CANCER FOR PERIOD 1904-1913

Year	Deaths	Per Cent. of Total Deaths	Mortality Per 100,000	Estimated Population
1904	23,395	4.24	70.15	33,349,137
1905	24,330	4.46	71.36	34,094,605
1906	29,020	4.41	69.12	41,983,419
1907	30,514	4.44	70.93	43,016,990
1908	33,464	4.84	71.52	46,789,913
1909	37,562	5.13	73.84	50,870,518
1910	41,039	5.10	76.22	53,843,896
1911	44,024	5.25	74.27	59,275,977
1912	46,531	5.55	77.01	60,427,247
1913	49,928	5.60	78.88	63,298,718

In reviewing the cancer mortality over a ten-year period, from 1904 to 1913, inclusive (Table 1), a steady increase is noted in all years except the year 1906. In the year 1904 there was a mortality of 70.15 per one hundred thousand; in the year 1913 it had increased to 78.88 per one hundred thousand, a gain of 8.73 per one hundred thousand in a ten-year period. This represents an increase of 12.47 per cent. in the cancer mortality per one hundred thousand for a ten-year period. The relation of the cancer mortality to the general mortality during the same period shows a corresponding increase. In the year 1904 the deaths from cancer represented 4.24 per cent. of the total deaths, while in the year 1913, 5.60 per cent. of all deaths, an increase in its relation to the general mortality of 32.07 per cent. The cancer mortality in this ten-year period, both in its relation to the general mortality and in its relation to the population, shows, except in the year 1906, a steady increase. This increase is graphically illustrated in Chart 1 (taken from the mortality statistics of the census bureau), and for a fourteen-year period shows a gradual rise in cancer deaths. The decline of the death rate in several of the major infectious diseases, namely, tuberculosis, pneumonia, typhoid fever, diphtheria and croup, stands in contrast to the cancer mortality.

SEX DISTRIBUTION

If our figures show an increase in cancer deaths, it would be pertinent to inquire into the distribution of this increase in the male and female portions of the population (Table 2).

A glance at Table 2 shows that cancer is more frequent in females than males. In the year 1904 cancer deaths in males constituted 1.61 per cent. of the total mortality; in the year 1913, 2.25 per cent., an increase of 39.75 per cent. in its relation to total deaths in ten years. In the female population for the year 1904 the cancer mortality constituted 2.63 per cent. of the total mortality, and in the year 1913, 3.35 per cent., an increase of 27.38 per cent. in the decennium. Comparing the percentage of increase in males and females in relation to the general mortality, we have in the male population an increase of 39.75 per cent., and in the female, 27.38 per cent.; an 11 per cent. excess increase in the male population.

This change in the distribution of the cancer mortality is strikingly shown by comparing in Table 2 the percentage of cancer deaths that occurs in the male and female population. In the year 1903, 37.96 per cent. of all cancer deaths occurred in the male population, while 62.04 per cent. of the cancer mortality occurred in the female population, and ten years later, 1913, 40.15 per cent. of the cancer mortality occurred in the males and 59.85 per cent. in the females. It appears here that the pendulum of cancer mortality is slowly swinging out of the female and into the male population. This is graphically shown in Chart 2. The lower line over the double cross-hatching represents the percentage that the cancer mortality in male and female population bears to the total mortality, and the upper line over the single cross-hatching indicates the percentage of cancer deaths in males and females by years.

There can be little argument regarding the correctness of this particular phase of cancer mortality. This is a discussion of the distribution of cancer deaths in two divisions of the population, and no matter what the relation of other conditions be to the general cancer mortality, it could not affect, to a great extent, figures whose basis of comparison is entirely within the cancer deaths tabulated.

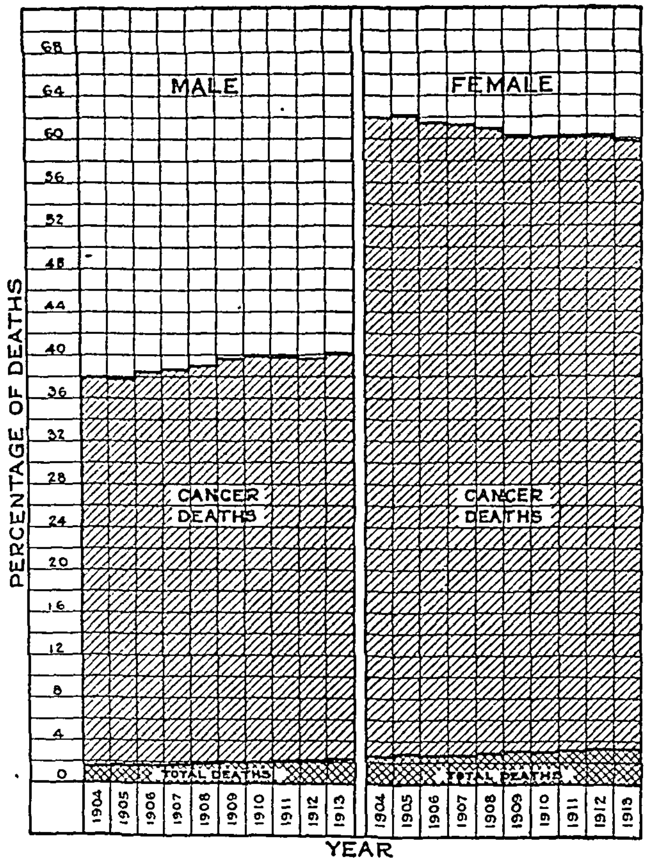

Chart 2.—Relation by sex and year of cancer deaths to total deaths, and the distribution of the percentages of cancer deaths in the male and female population.

AGE DISTRIBUTION

It was necessary, in order to obtain accurate population figures in the table showing age distribution of cancer, to confine the data to that obtained from the registration states. I also purposely constructed these tables from the data for the years 1900 and 1910, which, being census years, would add to the accuracy of the tables in their respect to the population figures.

The age distribution of cancer is now and has been one of the most interesting phases of cancer mortality. Whether or not cancer is more frequent at earlier or later ages has been a matter of conjecture for some years. The changes in the age distribution of cancer and its bearing on the mortality can only be discerned by proper statistical investigation..

In Tables 3 and 4, we have the age distribution and mortality for the years 1900 and 1910. By referring to these tables it will be noticed in the year 1900 that 10 per cent. of the total cancer mortality occurs prior to the fortieth year, and that in the year 1910 about 9 per cent. of the cancer mortality occurs prior to that age.

The number of cancer deaths at various age periods, however, does not indicate properly the age distribution of cancer. It has been a common error for persons inter-

TABLE 2.—DEATHS FROM CANCER, REGISTRATION AREA, 1904-1913; PER CENT. OF TOTAL DEATHS IN MALES, PER CENT. OF TOTAL DEATHS IN FEMALES, AND PER CENT. OF TOTAL DEATHS *

Year	Male Deaths from Cancer	Per Cent. of Cancer Deaths	Per Cent. of Total Deaths	Female Deaths from Cancer	Per Cent. of Cancer Deaths	Per Cent. of Total Deaths	Total Cancer Deaths	Per Cent. of Total Deaths
1904	8,881	37.96	1.61	14,514	62.04	2.63	23,395	4.24
1905	9,189	37.77	1.68	15,141	62.23	2.78	24,330	4.46
1906	11,166	38.48	1.70	17,854	61.52	2.71	29,020	4.41
1907	11,800	38.67	1.72	18,714	61.33	2.72	30,514	4.44
1908	13,045	38.98	1.89	20,419	61.02	2.95	33,464	4.84
1909	14,918	39.72	2.04	22,644	60.28	3.09	37,562	5.13
1910	16,373	39.90	2.03	24,666	60.10	3.06	41,039	5.09
1911	17,525	39.81	2.09	26,499	60.19	3.16	44,024	5.25
1912	18,464	39.68	2.20	28,067	60.32	3.35	46,531	5.55
1913†	20,045	40.15	2.25	29,883	59.85	3.35	49,928	5.60
	141,406	*39.30*	*1.95*	218,401	60.70	3.02	359,807	4.97

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* Assuming the population of the United States to be constant for the next ten years, and the general death rate to average that of the registration area for the period 1904-1913 (15.06), at the present rate of increase of cancer deaths, would give in the year 1923, a surplus of 19,819 deaths from this cause, making a total of 101,427 deaths for the year.

† Estimated population of the United States in 1913, 96,765,573.

preting statistical tables to pay too much attention to percentages in analyzing the age distribution of deaths, for the real measure of the true mortality at any age period is found in the specific rates for that age period. In examining the specific rates for cancer for the two years, 1900 and 1910, it will be found that up to the fortieth year there are no marked increases in the mortality rates. After the fortieth year, however, the deaths per hundred thousand show an increase in the year 1910 over all rates in the year 1900; furthermore, this increase is a progressive one, that is, the greater the age period the greater the relative and absolute increase. In the year 1900, between the ages of 40 and 50, there were 90.88 deaths per hundred thousand persons at that age, while in 1910 there were 101.36 deaths at the same period. In the period from 50 to 60 years, in 1900, there were 198.43 deaths per hundred thousand, and in 1910, 229.42 for the same period; while in the age period from 70 to 80, in 1900, there were 495.84 deaths per hundred thousand, and in 1910, 661.54. The greatest increase in mortality rates is seen in the age period from 80 to 90 years, which was 587.44 per hundred thousand of the population in 1900, and 811.87 per hundred thousand in 1910.

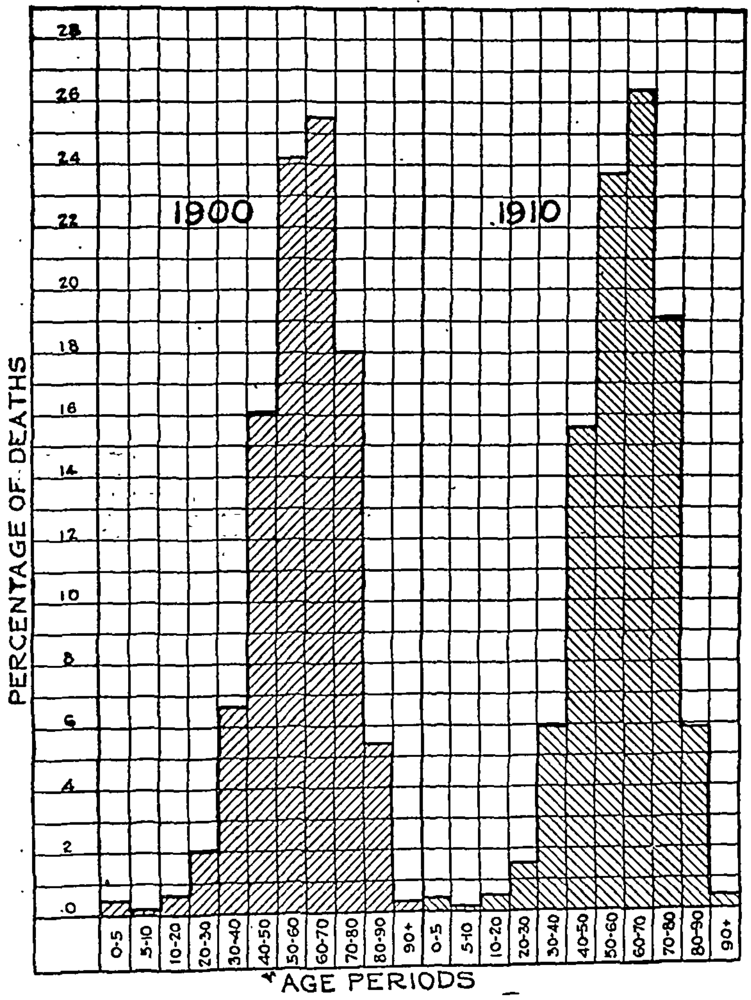

Chart 3.—Percentage of cancer deaths by age periods, 1900.

This is graphically illustrated in Charts 3 and 4. Chart 3 gives the percentages of deaths which occur in the various age periods. It will be noted (Chart 3) that the greatest percentage of cancer deaths in 1900 and 1910 occurred in the age period from 60 to 70 years and that the percentage of deaths declined rapidly to 90 years and over, but a true graphic picture of cancer mortality at various age periods is shown in Chart 4. Here it is seen that the deaths per hundred thousand of the population between 60 and 70 years is lower than in any of the age periods thereafter, even though that age period contributes the greatest number of cancer deaths. The most interesting point on this chart is the increase in the mortality in ten years as evidenced by the height of the column at various age periods in 1910 as compared with those of 1900.

SITE OF CANCER

Unfortunately the statistics concerning this most interesting phase of cancer mortality cannot be analyzed as they should be on account of the manner in which these causes of death are classified, but there are some points of general interest which are worth reviewing.

Table 5 gives the deaths per hundred thousand of the population from cancer according to the organs affected by year periods for ten years. The most frequent site of cancer, as evidenced by the mortality, is cancer of the stomach and liver, from which 31.2 persons out of every hundred thousand in the registration area died in the year 1913. The next in order of frequency is that of the female genital organs, the mortality for which was 12.2 per hundred thousand of the population. Cancer of the intestines, with a mortality of 10.5 is followed closely by cancer of the breast with a mortality of 7.3. In the decennial period 1904-1913, all forms of cancer show an increase. The most marked increase is seen in cancer of the intestines, 45.83 per cent., and cancer of the mouth is next in order with an increase of 40.90 per cent. Cancer of the breast with cancer of the stomach and liver increased 19.67 and 19.08 per cent., respectively. Cancer of the female genital organs increased 18.44 per cent., while cancer of the skin has shown little if any increase in the period. It is interesting to note here the percentage of increase of cancer which should be easy to diagnose, and that which is more difficult. From the standpoint of diagnosis, these cancers could be divided roughly into those which can be easily observed, and those of internal organs. The greatest percentage increase of cancer is that of cancer of the intestines, 45.83 per cent., which is nearly balanced by the increase of cancer of the mouth, 40.90 per cent., and, likewise, cancer

TABLE 3.—CANCER IN REGISTRATION STATES, 1900

Age Period	Deaths From Cancer Reg. States	Deaths per 100,000	Per Cent. of Total Cancer Deaths	Estimated Population, Registration States
0- 5	62	2.99	0.49	2,072,797
5-10	26	1.31	0.20	1,984,846
10-15 15-20	83	2.29	0.65	3,624,065
20-25 25-30	260	6.94	2.04	3,745,605
30-35 35-40	853	27.47	6.68	3,104,747
40-45 45-50	2,055	90.88	16.09	2,261,283
50-55 55-60	3,092	198.43	24.21	1,558,210
60-65 65-70	3,259	333.49	25.52	977,227
70-75 75-80	2,302	495.84	18.03	464,260
80-85 85-90	697	587.44	5.46	118,651
90-95 95 and over	46	464.27	0.36	9,908
Unknown	34	86.86	0.27	39,143
Total	12,769	63.97	100.00	19,960,742

of the stomach and liver has increased 19.08 per cent. and is balanced by an increase of 19.67 per cent. in cancer of the breast.

From the information obtained from the foregoing statistical tables we can come to but one conclusion, that is, that the cancer mortality is increasing. To be sure that the increase is real we must exclude the possibility of an increase in the number of reported deaths by better diagnosis, and changes in the population which would tend to add additional numbers to that portion in the cancer ages.

Undoubtedly new methods of diagnosis have greatly facilitated the detection of cancer, and if proper morbidity reports could be obtained the result of these methods would be reflected in the rates for incipient cancer, which would always include a fair percentage of obscure and borderline cases.

The matter of diagnosis of advanced cancer is, in most cases, a much simpler matter. The classical symptoms of advanced cancer are and have been the same for a number of years, and most physicians are conversant with them. In mortality statistics of cancer we are dealing with reports of cancer cases the symptoms of which are so evident as to be considered the primary cause of death, and the question of refined diagnostic methods and the inclusion of borderline cases cannot be a large factor in determining the rates. I submit that it is hardly probable that physicians of a decade ago were so deficient as not to be able to recognize advanced cancer.

TABLE 4.—CANCER IN REGISTRATION STATES, 1910

Age Period	Deaths From Cancer, Reg. States	Deaths per 100,000	Per Cent. of Total Cancer Deaths	Estimated Population
0- 5	159	3.27	0.44	4,867,909
5-10	64	1.44	0.18	4,438,038
10-15 15-20	197	2.28	0.54	8,652,398
20-25 25-30	562	6.25	1.55	8,992,169
30-35 35-40	2,152	29.29	5.95	7,347,865
40-45 45-50	5,642	101.36	15.59	5,566,408
50-55 55-60	8,589	229.42	23.73	3,743,780
60-65 65-70	9,576	429.01	26.46	2,232,102
70-75 75-80	6,926	661.54	19.14	1,046,950
80-85 85-90	2,139	811.87	5.91	263,467
90-95 95 and over	159	716.51	0.44	22,191
Unknown	28	36.17	0.08	77,416
Total	36,193	76.60	100.01	47,250,693

If the increase in mortality rates shown in the tables were dependent on changes in the composition of the population, we should have to consider sex and age distribution, the two possible changes which could bring about an increase in general cancer rates without an increase in the specific rates.

On reviewing the population figures for sex distribution in the registration states, I find comparatively little change in its composition. In 1900, 50.03 per cent. of the population was male and 49.97 female, and in the year 1910, 51.4 was male and 48.6 female. Since the incidence of cancer is considerably less in males than females, changes of this character in the population would, per se, tend to decrease rates. So far as the changes in sex distribution of the population are concerned we must eliminate them as factors in this rise in the cancer mortality shown in the preceding tables.

Knowing as we do that the bulk of cancer deaths occur after the fortieth year, any change which would add to the population after that year without a corresponding increase in that portion prior to the fortieth year would cause an increase in the general cancer mortality. A study of the population in the registra-

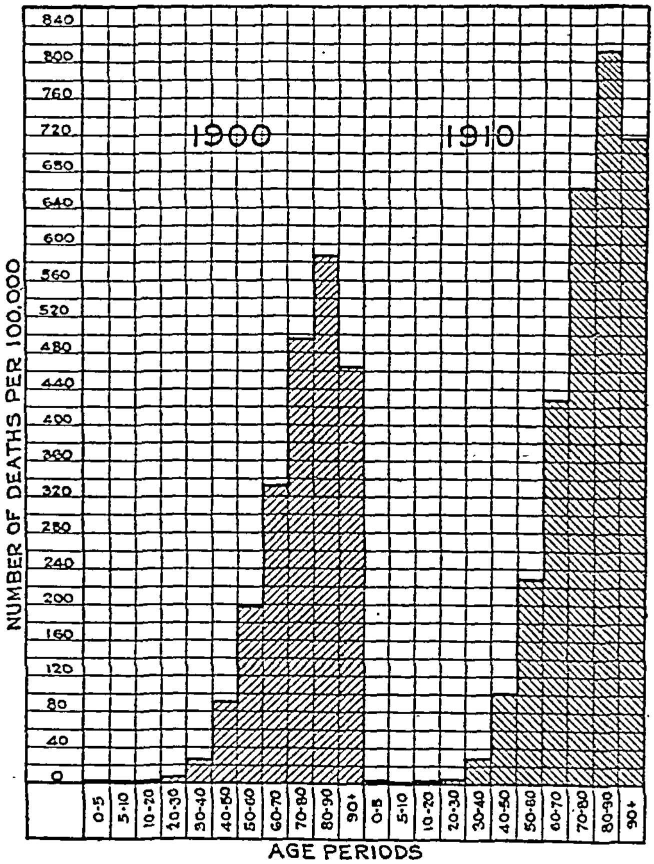

Chart 4.—Deaths per one hundred thousand of the population by age periods, 1900 to 1910.

TABLE 5.—CANCER IN REGISTRATION AREA; DEATHS PER ONE HUNDRED THOUSAND OF POPULATION FROM VARIOUS FORMS OF CANCER, 1904-1913

Location of Cancer	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Mouth	2.2	2.3	2.2	2.3	2.5	2.8	2.9	2.9	3.0	3.1
Stomach and liver	26.2	26.3	26.1	27.0	27.9	29.3	30.6	29.3	30.6	31.2
Intestines	7.2	8.0	7.8	8.3	8.5	9.2	9.8	9.8	9.8	10.5
Female genital organs	10.3	10.7	9.7	10.2	11.2	11.2	11.4	11.3	11.7	12.2
Breast	6.1	5.9	5.8	6.0	6.5	7.0	6.9	7.2	7.3	7.3
Skin	2.3	2.4	2.3	2.6	2.7	2.9	2.7	2.7	2.9	2.7
Other or unspecified organs	15.9	15.9	15.2	14.6	12.3	11.3	11.9	11.0	11.6	11.9
All forms	70.2	71.4	69.1	70.9	71.5	73.8	76.2	74.3	77.0	78.9

tion states by age groups in the years 1900 and 1910 shows that the percentage of persons living in each age period did not vary by 1 per cent. in the ten years. The percentage of population included in the ages 0 to 40 years in 1900 was 72.80 and in 1910, 72.58, while the percentage of population included in the ages after 40 years in 1900 was 27.20, and in 1910, 27.42, differences so slight that they are negligible. More convincing is a comparison of the specific mortality rates. These rates are computed on the cancer deaths in certain groups of population, and no matter what changes are taking place in the composition of a population the only factor which could change the morality rates within these groups would be an actual increase or decrease in the number of deaths per one hundred thousand in any particular group. We have seen in Tables 3 and 4 there was a marked increase which is specific for each age period, and which must be in itself genuine.

If we cannot account for the increase in the cancer mortality by better diagnosis or by changes in the composition of the population I submit that for the past decade the cancer rates in the registration area show a true increase.

16 West Saratoga Street.

HOSPITAL INTERNSHIPS IN OPHTHALMOLOGY *

E. C. ELLETT, B.A., M.D.
MEMPHIS, TENN.

There are certain matters of interest to which your attention should be called. The first is in regard to the *comparative shortness of the program.* We were limited this year to fifteen papers, on account of the fact that the second day of the meeting is to be given up to exercises to commemorate the completion of the Panama Canal. In view of the important part that our profession has played in making possible the achievement of this great work, it is fitting that we turn aside for a moment from the main object of our coming together, and pay tribute to those workers whose discoveries and attainments have erected to their memories a "monument more lasting than brass."

We have further cause for a season of congratulation in that we are devoting ourselves to the celebration of a great commercial and engineering accomplishment, a work of peace, at a time when the older nations of the earth are wrapped in a terrible, destructive and desolating struggle; and in the enjoyment of the blessings of conditions that permit the unruffled pursuit of our usual work, we should not fail to both feel and express our sympathy for those, bound to us by the ties of a common task, whose lot is less fortunate, whose ways are less tranquil and whose labors are so rudely interrupted.

It has been the custom for many years for the section to invite a distinguished visitor from some other country to be a guest at the meeting; but after due consideration it was decided not to extend such an invitation this year. Disturbed conditions in Europe made it very doubtful if any of those whom we specially desired would have found it possible to come, and the shortness of the program already referred to made it seem advisable to give the time to our own members as a matter of choice and in justice to those who have brought the section to its present efficiency. Before the weight of these two conditions was fully realized, a sentiment was gaining ground to the effect that occasional, instead of regular, invitations to foreigners to participate in our meetings would be a more dignified attitude for us to adopt, and would at the same time make the recipient feel that he was the more complimented. In view of these facts, the officers of the section feel that they do not need to offer any apology for the omission of this feature.

The policy of the program has been, as in previous years, to encourage as much as possible those men who have not heretofore contributed to our proceedings; but you will find on the list some of those well-known names, without which a meeting of this section could hardly be successfully conducted, men to whom it is our pleasure to listen again and again. "Age cannot wither" them, "nor custom stale" their "infinite variety"; and may the day be far distant when our deliberations will lose the leaven of their presence.

Let me remind you, as my immediate predecessors have done, that the admirable features of the program are due to the energetic and well-directed efforts of our secretary, whose labors are the keystone of the arch, and without which our structure would fall to the ground. Nothing that I could say would be more than should be said in acknowledgment and appreciation of his more than efficient work, and those particulars wherein the program falls short of your expectations mark the occasions when an officious chairman or executive committee has interfered with his plans.

From appropriate committees a number of interesting subjects will be presented for your consideration, and among the most important is that of the Committee on Education in Ophthalmology. Their report is printed and will be distributed in time for it to be read by each of you before it is brought up for discussion and action. This committee, as you will see, met similar committees from the American Ophthalmological Society and the American Academy of Ophthalmology and Oto-Laryngology in Boston in October, and will present for your approval a plan whereby a board of nine would be appointed from these three organizations to pass on the qualifications of those desiring to appear as specialists in ophthalmology. While such a board will have no legal standing, its seal of approval can easily become the hall mark of genuine merit, and properly managed and supported by the organizations which create it, such a board could accomplish a great deal. Expressions from many quarters justify the expectation that this suggestion will be favorably received, and since this section has never been remiss in identifying itself with those things which stand for the advancement of ophthalmology, it can be expected to consider carefully their proposal, and approve it if it seems to promise what its sponsors believe it will do.

Another communication of much interest is that from the Committee on the Conservation of Vision. Although a child of this section, this committee was a youngster of such promise that it was weaned away from its real parent and adopted by the Council on Health and Public Instruction. We still retain an interest in its purposes and welfare, and are glad to know, from Dr. Allport's report, of the very excellent work which is being done. The need of some central organization with sufficient funds and adequate machinery for carrying on this work is being felt by all who have concerned themselves in it. Dr. Allport has given much time and labor to this matter, as any member of his committee can testify; but it is not good that the welfare of so great a cause should depend on the self-sacrificing efforts of any one man. It is hoped that all the interests looking to the conservation of vision will be federated and the work carried on from an adequate center.

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* Chairman's address, read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Thanks to the activity and energy of the members of the committee, the Knapp fund continues to serve the usual purposes for which it was founded.

The fund furnishes the Knapp Medal for meritorious work presented to this section. The committee on award is of the opinion that no contribution made to the last meeting was sufficiently noteworthy to justify conferring the medal this year. Certainly the fund deserves the cordial support of all those interested in the progress of ophthalmology, and I especially request you all to support it. Subscriptions in sums of less than $10 will be gladly received, but they do not entitle the subscriber to the two volumes mentioned.

It is the custom for the chairman of this section to make some reference in his address to such point or points of interest to the Section on Ophthalmology as he thinks should have special attention or investigation. In accordance with that custom, it is my desire to invite your further consideration of certain aspects of the question which have been so to the fore in recent years, the preparation of the ophthalmologist for his his work. A phase of this subject which has not yet been touched on very fully is that of the available facilities for hospital work. Closely related to this are the plans which have been put into force in two of our leading state universities. One which was explained to you at length by my predecessor has had further trial during the past year at the University of Minnesota, and has given great satisfaction. Briefly, it consists in the employment of a number of men for a period of three years, at an increasing salary, who assist in the clinical work and in the instruction of the undergraduate and graduate students. These men are designated as "fellows," and the scheme contemplates the ultimate employment of six. The development of this plan was brought out in a paper before the Conference on Medical Education in Chicago in February. A somewhat similar plan is in vogue at the University of Michigan, where a man serves the department for three years as intern, assistant and instructor, respectively, one year each, at a salary which increases each year. The duties of the intern require no special elucidation. The second year is spent as assistant to the head of the department, with full charge of the operating room and morning treatments of all outpatients. In the third year he gives instruction in refraction, does refraction, and has charge of the laboratory in the mornings.

This scheme has suggested the idea that the very interesting work on the classification of hospitals by the Council on Medical Education, and the parallel work about to be undertaken by the American College of Surgeons, might be advantageously supplemented at this time by collecting information relative to the work offered by various special hospitals in this country in the shape of internships. A questionnaire was therefore formulated and sent to all the special hospitals listed in the American Medical Directory, and I wish to present to you the data gathered from a perusal of the replies. That this information is incomplete is true, but every one who has attempted a collective investigation will sympathize with the fruitless efforts that were made to secure responses from all the hospitals. Some institutions were inadvertently omitted, but the result is nevertheless of some worth.

The value of an internship is particularly great in postoperative work, but almost equally great in certain severe inflammatory and traumatic conditions. The whole question is summarized, and much more is suggested, by considering the case of those men who have had good "courses" in ophthalmology, with cadaver and clinical work, and who can perform a creditable operation for cataract, for instance, but who cannot tell the next day whether or not the eye is pursuing a normal and satisfactory postoperative course.

Answers were obtained by some means from twenty-five institutions. Many of these are eye, ear, nose and throat hospitals; but as far as possible to ascertain them, the facts set forth apply to the eye service alone. It was impossible to arrive, by any reasonable effort, at the facts concerning the special departments of general hospitals, but it must not be forgotten that in many of these an excellent service in ophthalmology can be obtained, and this is especially valuable where an outpatient department is also accessible to the interns. In such a case, the tour of duty for the intern should be simultaneous in the wards and outpatient department, since many of the patients are never house patients, and a service limited to the house would be inadequate. It would afford no opportunities for refraction, perimetry, muscle work, etc., and very limited ones for ophthalmoscopy.

Comments on the subject can be best made in a general way, because the information was not always exact. Previous general hospital experience is always desirable, but seldom required of an applicant. Since the supply of positions does not equal the demand, hospitals can fix rather high requirements, and certainly previous hospital experience, or a satisfactory equivalent in general practice, would be very desirable not only to the institution, but also to the future ophthalmologist, and should be a necessary condition for the applicant.

An outpatient department is maintained by all the hospitals answering this inquiry, but indefinite information was given in regard to interns' duties in that department. Unless the arrangement is to appoint the intern from the clinical assistants, or from externs, the interns should serve a definite tour of duty in the outpatient department, because the work in the house alone does not give sufficient experience with the various forms of functional examination and with the use of the ophthalmometer, ophthalmoscope, perimeter, and tropometer, with which one must be familiar. Refraction, which constitutes such a large and important part of the daily work of the ophthalmologist, can be learned only by practice, and the opportunity for this is found only among the outpatients. The same can be said of many of the minor ailments and milder inflammatory diseases, which constitute a much larger part of one's work, especially in the beginning, than serious maladies and capital operations.

In reading over the replies to the circular letter, one is impressed with the fact that a hospital intern is no longer at school. Little is demanded of him beyond a certain amount of routine work. He does some history taking, which varies greatly in quantity and quality in different places, and renders a certain assistance in the care of patients, operating room duties, etc. He has abundant opportunities, but there is no one whose duty it is to see that he profits by them. In the larger institutions with a graded house staff this is not the case, and the junior is not only given a certain amount of instruction by the senior, but is required to perform certain duties. This is very desirable, and in proportion as this system does not exist, the present plan seems to fall short of accomplishing the best results. As was pointed out in the report of the Committee on Hospital Efficiency of the Philadelphia County Medical Society, one of the functions of a hospital is the education of doctors and nurses, and some plan could be profitably adopted whereby the intern could receive more or less systematic instruction, and be actively supervised in his work, which would greatly increase that particular hospital's efficiency as an educator. When we consider that the average intern enters on his duties in a special hospital in the most profound ignorance of the rudiments of his work, the advisability of such a plan would seem to be apparent. Various ways suggest themselves for solving this need. In institutions in which systematic instruction is given, he should be required to attend such instruction, that is, lectures, in the first part of his term. Otherwise the matter could be placed in the hands of a senior intern or house surgeon; or, if only one intern is employed, in the hands of an executive officer or committee or some one specially charged with the work. A little systematic instruction at the beginning will clarify many otherwise confusing subjects, and this instruction can take the form of quizzes, lectures or merely the outlining of a course of study, with such conversations or other interrogations from time to time as will enable the intern to demonstrate that he is preparing himself to take advantage of his opportuni- preparing to take advantage of his opportunities. eases and surgical work will be presented to him sufficiently forcibly; but some special means should be taken to see that he avails himself of the opportunities that are offered to study refraction, ophthalmoscopy and ocular pathology. An intern, like a student, is rarely able to proportion his work wisely, and a little guidance from some one more experienced would enable him to use his time and opportunities to the best advantage. In brief, our present plan gives a man abundant opportunities, but fails in that it does not insure his taking advantage of them.

Incidentally, this inquiry has revealed some interesting facts in regard to the special hospitals in other particulars. You are all aware that the American Medical Association is now conducting an investigation and classification of hospitals, and out of this work will come much good along the line of which I have especially spoken, as well as in other matters pertaining to hospital efficiency. With such plans as those in use at the universities of Minnesota and Michigan, and the systematic course in ophthalmology given by the University of Colorado, and the graduate courses now being formulated by Harvard University, and the close relation which obtains and which is being further developed between the department of ophthalmology and the department of research medicine at the University of Pennsylvania, both precept and example are at the disposal of those who are charged with these problems of medical education.

CHRONIC NEPHRITIS

ANALYSIS OF 250 CASES IN PRIVATE PRACTICE*

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AND
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LOS ANGELES

These 250 cases have been tabulated from patients in our private practice occurring over a period of eighteen years. They are considered entirely from the clinical standpoint, and as they represent, in the main, office cases or ambulant patients, they must be regarded as representing Bright's disease of the milder or earlier type. There is no intention here to enter on the intricate mass of renal pathology, nor have we investigated or tried the several functional kidney tests, which lie beyond the province of this paper; but it is intended to call attention to several groups of nephritic cases observed and treated in Southern California. In making the diagnosis, other factors than the examination of the urine have been considered. It is certain that many patients who show traces of albumin and a few casts do not suffer from nephritis, while true renal disease may occur without albuminuria; but we do recognize that certain persistent findings in the urine, accompanied by changes elsewhere with definite symptoms, are manifestations of a primary or secondary disturbance of the renal function which, when early recognized and given proper treatment, is easily controlled and may become quiescent or arrested.

For the better study of these cases for clinical purposes, an arbitrary classification into four groups has been made (Table 1).

TABLE 1.—CLINICAL GROUPS OF NEPHRITIS CASES

	No.
1. Primary	75
2. Cardiovascular	82
3. Miscellaneous association	24
4. Secondary to tuberculosis	69
Total	250

With few exceptions, our cases of true nephritis fall clinically into what is called the chronic interstitial type, in which class they will be discussed. The exceptions include a few that belong to the chronic parenchymatous type and are numbered among those in Group 2, who died; one patient in Group 1 died—acute hemorrhagic. A few others, at first acute or parenchymatous, improved, and naturally fell into the interstitial variety which, we believe, includes most of the degenerative changes that take place in the kidney, whether primary or secondary, as well as the contracted or sclerotic kidney.

EXPLANATION OF CLINICAL GROUPS

The cases are placed into these groups with reference to their apparent etiology.

Group 1 embraces those which, from their history, followed acute infectious diseases and alcohol, as shown in Table 2.

Group 2 embraces those which accompanied, preceded or followed chronic endocarditis or arteriosclerosis, with or without a history of definite earlier infection.

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* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

Group 3 embraces those which occurred in the course of chronic diseases, infectious or otherwise, and which could not naturally fall into the other groups.

Group 4 embraces those which occurred in the course of pulmonary tuberculosis.

In Table 3 are given the age at onset of disease, sex, and previous duration of disease for each of these groups. In Chart 1 the early symptoms are shown. The occupation is given in Table 4.

Only the fourth or tuberculous group is not carried out in detail, as the course, treatment and results were dependent on the pulmonary trouble, and did not seem pertinent to the paper. Where there was a true nephritis, the pulmonary symptoms were aggravated; therefore, on the whole, the discussion limits itself to the first three groups.

TABLE 2.—ETIOLOGY

Cause	Groups 1. Primary No.	 2. Cardiovascular No.	 3. Miscellaneous No.	Total No.
Alcohol	3	3	0	5
Arteriosclerosis	0	25	0	25
Acute rheumatic fever	1	10	1	12
Arthritis, chronic, streptococcus viridans infection	0	1	3	4
Cholecystitis	2	2	0	4
Diphtheria	1	0	0	1
Endocarditis, chronic	0	3	0	3
Hyperthyroidism	0	0	2	2
Malarial fever	1	1	0	2
Measles	1	1	0	2
Myocarditis	0	7	0	7
Peritonitis	2	0	0	2
Pernicious anemia	0	0	4	4
Pneumonia	18	11	4	33
Pregnancy	2	0	0	2
Pyonephrosis	0	1	0	1
Renal calculus	0	1	0	1
"Rheumatism"	4	2	0	6
Scarlet fever	9	3	0	12
Septicemia	0	0	2	2
Syphilis	0	2	3	5
Tonsillitis	5	3	0	8
Typhoid fever	5	4	0	9
Unknown	21	2	5	28

TABLE 3.—AGE AT ONSET, AND PREVIOUS DURATION

	Groups 1. Primary No.	 2. Cardiovascular No.	 3. Miscellaneous No.	 4. Tuberculous No.	Total No.
Males	40	48	12	44	144
Females	35	34	12	25	106
Age at Onset (Decade):					
First	4	0	2	0	6
Second	7	1	1	3	12
Third	11	5	1	32	49
Fourth	17	9	4	23	53
Fifth	14	15	4	8	41
Sixth	15	26	8	1	50
Seventh	6	16	4	2	28
Eighth	1	10	0	0	11
Total	75	82	24	69	250
Previous Duration of Disease:					
Less than 1 month	5	1	3	5	14
From 1 to 3 months	2	4	2	9	17
From 3 to 6 months	8	8	1	6	23
From 6 to 12 months	11	10	2	6	29
From 1 to 2 years	16	19	3	6	44
From 2 to 5 years	17	21	10	18	66
From 5 to 10 years	4	10	0	12	26
From 10 to 15 years	9	5	2	5	21
From 15 to 20 years	1	2	0	0	3
From 20 to 25 years	1	0	1	1	3
More than 25 years	1	2	0	1	4

It would seem that the true nephritis, or destruction of renal tissue, belongs to those cases of Group 2—cardiovascular. Whether or not those in the other three groups can rightly be classed as true nephritis, until real vascular changes elsewhere have taken place, is an open question. Certainly, in following several patients in the first, third and fourth groups, we have found that their trouble has disappeared and the urinary findings have become normal after periods ranging from several months to two years, and we do not believe that nephritis is so cured. It has been said that there is an early, curable stage of nephritis, with slight renal changes, in which the kidney again assumes its normal function; but it seems, from a clinical point of view, more probable that these cases are merely a result of toxemia and do not produce any real permanent change in the kidney tissue. Examples of this type are eighteen cases (thirteen in Group 1 and five in Group 3) in which the urinary findings became normal. The largest number began after chronic constipation and gastro-intestinal disturbances, three after severe tonsillitis, two after acute alcoholism, one after pleurisy with effusion, and one patient has had albumin with granular casts in his urine for thirty-five years, discovered through life insurance examination, and, at present, clinically well, aged 51. In none of these did the heart appear enlarged or the second aortic accentuated. Other cases of similar nature, but of shorter duration, not here included, have occurred in our practice, but with sufficient frequency to emphasize their clinical occurrence. In Group 4, the tuberculous group, it has been a frequent observation that, as the pulmonary trouble improves, the albumin and casts have disappeared, along with increased elimination of urea. The continued taking of abundant or of excessive protein many result in similar findings, a fact which has been noted often in tuberculous patients. One of this type, aged 37, in Group 4, has been under observation six years, and during this period he suffered for two years, off and on, from repeated attacks of headache; at the same time albumin and casts appeared in his urine. It was found that each time these attacks occurred he had returned to an increased or forced protein diet. For the past two years the excessive proteins have been cut off, with the result that symptoms have disappeared and the urine remains normal, so that, excepting the infectious type, included in all four groups (because even the fourth or tuberculous group shows severe infection in the last stages), the disease tabulated can well be caused by toxemia, which may soon disappear, or continue to manifest itself

TABLE 4.—OCCUPATION AT ONSET

Occupation	Groups 1. Primary No.	 2. Cardiovascular No.	 3. Miscellaneous No.	 4. Tuberculous No.	Total No.
Actor	0	0	0	1	1
Artist	0	2	1	0	3
Aviator	0	0	1	0	1
Banker	4	4	1	5	14
Barber	1	0	0	0	1
Carpenter	0	0	0	2	2
Chauffeur	0	0	1	1	2
Chemist	0	2	0	1	3
Child	4	0	1	0	5
Civil engineer	1	1	0	1	3
Clergyman	0	3	0	0	3
Clerk	6	3	0	8	17
Commercial traveler	0	1	0	0	1
Domestic	3	0	0	2	5
Farmer	0	2	0	3	5
Housewife	23	28	9	15	75
Laborer	2	4	0	2	8
Lawyer	4	0	0	4	8
Manufacturer	2	1	1	1	5
Merchant	0	8	1	1	10
None	4	3	2	4	13
Nurse	2	2	0	0	4
Office work	3	2	1	2	8
Physician	3	3	1	4	11
Plumber	0	0	0	2	2
Publisher	2	0	0	0	2
Real estate	2	3	0	1	6
Retired	2	8	2	0	12
Student	5	1	2	3	11
Tailor	1	0	0	5	6
Teacher	1	1	0	1	3

until other organs as well as the kidneys become involved, vascular changes take place and true nephritis results. When true nephritis is present, the best outcome possible is an arrest of the disease, and that the patient be clinically well for years.

AGE AND RESIDENCE AT ONSET

The analysis of the several groups shows such results as one would expect. Primary has the largest number in the fourth and fifth decades; cardiovascular in the fifth, sixth and seventh decades; tuberculosis in the third and fourth. In all four groups, the previous duration of the illness shows that the largest number suffered from two to five years. The occupations give little information except that they are among indoor workers, and the larger number had previous mental or physical overstrain.

The residences of these patients and the location at the onset of the disease have been carefully studied in each case. Neither had any special bearing, one way or the other. A total of ninety-eight patients resided in the Pacific Coast States at the onset of the disease; seventy-two in the Central States, seventy in the Atlantic States, and ten developed their trouble in foreign countries.

EARLIEST SYMPTOMS

Among the earliest symptoms in the primary group, the most frequent, in their order, were weakness, cough and asthmatic symptoms, digestive disturbances, headache, muscular pain, and nervousness and restlessness. Each of these is easily accounted for, and it would seem that the chest symptoms are due to the development of chronic bronchitis and emphysema, so often found secondary to nephritis. Contrasting this with the same cases during the course of treatment, we find the digestive disturbance comes first in frequency, nervousness and restlessness second, and there is a marked diminution in complaint of weakness, as well as headache and asthmatic symptoms.

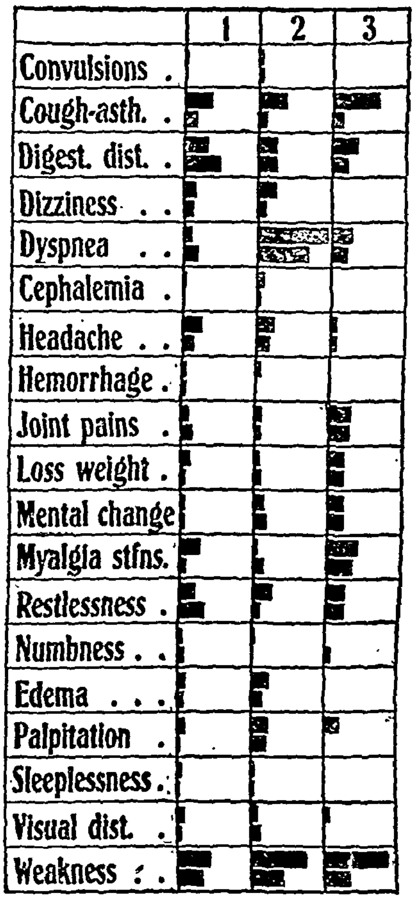

Chart 1.—Early persistent symptoms.

In Group 2, the chief early symptoms, in order of their frequency, are dyspnea, weakness, cough, vertigo, digestive disturbance and edema. During the course of the treatment of patients of this group, dyspnea, which was the most frequent early symptom, disappeared in eleven of the cases, while the weakness, cough and edema disappeared in about 50 per cent.

In Group 3, the earliest symptoms in frequency were weakness, cough, digestive disturbance, dyspnea and joint pains. During the time of treatment, the cough and dyspnea lessened, while the joint pains remained in evidence. The joint pains in this group are explained by the four cases of chronic infectious arthritis, and marked pyorrhea alveolaris, in which the *Streptococcus viridans* was grown from the roots of removed teeth and vaccine given. It is interesting to note that the cough or asthmatic symptoms in each group diminish to a minimum under treatment, and a marked improvement occurs in the weakness and digestive disturbance.

The marked symptoms of dyspnea in Group 2 can be explained by the cardiovascular complications. Here are found the cases with the high blood pressure and arteriosclerosis. Arteriosclerosis, other than that due to syphilis, seems not well understood, but it appears to be the result of longstanding hypertension, which, with cardiac hypertrophy, is generally recognized as a compensatory factor to nephritis, aiding the kidney in maintaining its function.

Of course, arteriosclerosis may cause nephritis, and it appears that each may be the cause of the other. In the second group, the cardiac hypertrophy alone occurred in forty-four and the second aortic sound was accentuated in forty-seven cases out of the sixty-five. The Wassermann test was made and found negative in nine cases. Syphilis occurred in five cases, with a positive Wassermann reaction.

The percentage of retinal changes found was less than is usually reported. It was surprising in looking over the cases to find how little complaint of disturbed vision was made, and often no retinal change was found in the early or less severe cases. Marked retinal changes were shown in eight cases by neuroretinitis (arteriosclerotica) and in seven by hemorrhage into the retina; they occurred among the fatal cases. These always indicate a bad prognosis, of from six months to one year as the average duration of life. In Group 2, hemiplegia occurred in five cases, varying in severity from partial paralysis to complete loss of power.

OBJECTIVE FINDINGS

While the greater number of these cases came under observation before the present functional tests for the renal activity were available, it may still be of interest to note briefly the facts represented by those commoner methods of examination which have been longer in use. The higher readings of specific gravity were found in Groups 1 and 3. The average of all readings in Group 3 was lower than in any of the other groups, and depended (of course) chiefly on the total amount of urine, which was usually large. Readings of less than 1.005 have been frequent, and have occurred in each group, the lowest being 1.002, in Group 1.

Albumin was present at one time or another in all of the urines examined, only a few specimens, however, showing more than a slight cloud, and many showing but extremely faint traces. Many cases had intervals of freedom from albuminuria, but in all cases the albumin reappeared with exacerbation of symptoms.

Cylindruria, too, has been constant, the granular casts being by far the most frequently found, with hyaline coming next; a fair number had waxy casts at times, while only three had epithelial casts. We have not seen any special significance in the type of casts observed.

The urea has been followed as closely as possible, and the results of our examinations tabulated. Nothing of special note is shown. Roughly, the amount of urea excreted in the urine has varied with the diet. In some instances, the low output of urea was associated with exacerbations of the disease, the severe symptoms and the lower urea being both signs of deficient renal activity. In these cases we have seldom seen a high urea except when the patient was doing well clinically. In several instances we have seen a decreased urea output precede a clinical retrogression, and we have often seen an increased urea output followed by clinical improvement. We therefore do believe that it is a help to determine the urea of the urine when the diet is known and conditions can be controlled. We acknowledge, however, that we have found these observations to be of help only when supported by clinical evidence.

Our systolic blood pressure readings cover most of our cases, and for a great many of them a large number of readings were taken. As we would have expected, our highest readings were found in cases of the cardiovascular group, the highest being 270 mm. Hg, average 169 mm. Hg. Here, too, was the highest average blood pressure. Next comes the primary group with an average of 141 mm. Hg, then the miscellaneous group with an average of 127. In the tuberculous group we found lower readings than elsewhere, as a rule. The lowest reading of all recorded was 80 mm. Hg, in a case of Group 3, *Streptococcus viridans* infection with arthritis, which had also the clinical picture of toxic nephritis. This is hardly in accord with the statement of Struempell that all renal disturbances are associated with elevated blood pressure. Certainly, in these cases, the blood pressure was more markedly elevated in those nephritics who had also well-developed arteriosclerosis, especially with atheroma, than in those which we have looked on as primarily renal disturbance.

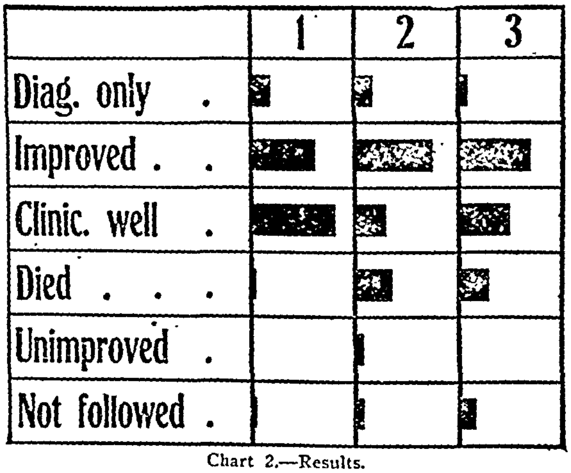

Chart 2.—Results.

TABLE 5.—URINARY FINDINGS

	Groups			
	1. Primary	2. Cardio-vascular	3. Miscel-laneous	4. Tuber-culous
Specific Gravity:				
High:				
Maximum	1.035	1.030	1.035	1.030
Average	1.017	1.018	1.014	1.016
Low:				
Minimum	1.002	1.004	1.004	1.004
Average	1.012	1.012	1.011	1.014
Albumin:				
Slight	68	66	23	65
Heavy	5	10	2	5
Casts:				
Hyaline	31	35	7	13
Granular	69	73	23	68
Waxy	11	14	3	4
Epithelial	1	2	0	0
Urea:				
High:				
Maximum	51	41	42	31
Average	24	22	19	20
Low:				
Minimum	3	4	7	7
Average	18	15	14	13
Systolic Blood Pressure:				
High:				
Maximum	243	270	190	154
Average	148	180	133	126
Low:				
Minimum	96	108	80	95
Average	134	154	120	120
Average	141	169	127	123

TREATMENT

Treatment will be considered under the following topics: (1) climate; (2) diet; (3) rest and exercise; (4) hydrotherapy, and (5) medicinal.

Climate.—Next to pulmonary tuberculosis, chronic nephritis and convalescence from acute kidney trouble are most benefited by climatic treatment. With that possible exception, no other disease is so favorably influenced by climatic conditions. Surely we are convinced that the conditions in Southern California which our patients have enjoyed have added most to their comfort, relieved their symptoms, and helped to produce good elimination and given longer periods of apparent help. The results, to come later, will speak for themselves. These patients do well near the coast in Southern California, quite as well as in the interior part, because humidity is not so much a factor here as in some other chronic diseases. The warm, equable climate, with little wind and low elevation, is a most important factor. It might be stated, however, that though humidity seems of less importance, these nephritics are in better health during our dry season—from July to January—than during the moist season of the other six months, especially those who have joint, muscular or gouty symptoms.

One of us (W. J. B.)[1] has stated in a former article that it is important that residence in such a climate should extend over a period of one or two years, under medical supervision; but in studying cases for longer periods of time, the conviction is forced upon us that many may remain clinically well in a suitable climate, over an indefinite period of years. There are no apologies to make for the outdoor life given this class of patients in Southern California, anywhere from the coast to 50 miles inland, along the foothill region and outlying valleys which offer low altitude and equable atmospheric conditions.

Diet.—Diet has been an important factor in all cases; but in any of the forms of treatment, individualization has been studied and not alone the disease. The objective findings, such as urine, blood pressure, etc., are considered less than the individual requirements. Some have contended that there is no real difference between the red and white meats for nephritic patients, but experience has shown us that it is best to cut out the red meats from the diet, but not to cut off too much of the protein. Two or three eggs are allowed daily, with plenty of cream, butter, cereals, buttermilk, etc. Fortunately, our patients can have fresh vegetables the year round. Highly spiced and all fried foods, strong cheese and alcohol are to be avoided. It is best to have patients take their water between meals, giving them from six to eight glasses in the twenty-four hours, one-third of which should be some alkaline water. One should guard against the excessive use of water.

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[1] Barlow, W. J.: Hare's Modern Treatment, 1910, i, 158.

Rest and Exercise.—This is ordered according to the patient, each one getting two hours of rest on his back in the afternoon. The blood pressure is certainly lowered by rest and light diet. Exercise, of course, is prescribed according to the case.

Hydrotherapy.—This is one of the most important divisions of treatment. Hot baths two or three times a week, in the form of vapor, electric or Turkish baths, followed by massage and rest, give free elimination by the skin and establish a right habit for future elimination, and seem to have a beneficial effect on the bowels. Several patients have had electric cabinets installed in their homes, so that treatment can be carried out regularly for years; where such is not possible, hot baths followed by wrapping in blankets have sufficed. Bowels have been kept active by cooked fruit, fresh vegetables, the coarser cereals and liquid petrolatum.

Medicinal.—Drugs have been used infrequently except where the heart muscle has needed help, or when the amount of urine passed was low. Digitalis for failing compensation, whether the blood pressure is high or low, acts well, and certainly, in these cases, high blood pressure is no counterindication for its use. Caffein, spartein and strychnin have seemed also very helpful.

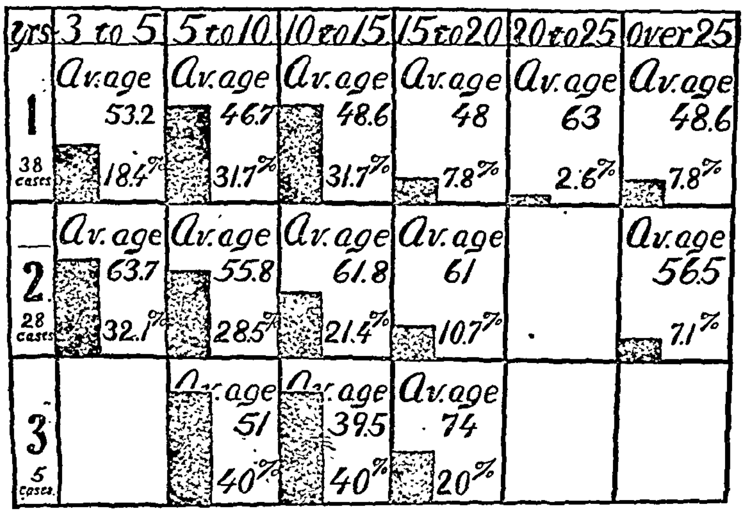

Chart 3.—Duration of disease and average age of seventy-one patients now under observation.

RESULTS

The results are studied and tabulated (Chart 2) in the three groups only. The fourth group, occurring secondary to pulmonary tuberculosis, has been omitted, as really belonging to a separate paper, and because the symptoms of nephritis were chiefly dependent on the primary disease. It was found that already too much time had to be given to segregating, classifying and studying results of the three more important groups. Therefore, omitting the sixty-nine cases in Group 4, there remain 181 to be reported on (Tables 6 and 7).

TABLE 6.—DURATION OF OBSERVATION IN ONE HUNDRED AND EIGHTY-ONE CASES

Duration of Observation	No.
Seen once only for diagnosis	17
Not followed after two months	20
From two to six months	28
One year	20
From one to two years	28
From two to five years	41
From five to ten years	14
From ten to fifteen years	11
Sixteen years	1
Eighteen years	1
Groups 1, 2 and 3	181
Group 4	69
Total	250

It is to be remembered that these results are given up to the time the patient was last treated, and many have not been followed up to the present time.

The statement that so many of these patients have been called clinically well may be attacked, and the answer is that from the clinical standpoint, the patients when last seen had been free from all suggestive symptoms and felt well.

Of the 181 cases tabulated, there are forty-seven, or 26 per cent., still under observation, after three or more years of treatment, grouped as in Table 8.

TABLE 7.—STATUS IN ONE HUNDRED AND EIGHTY-ONE CASES

Condition	Groups 1	2	3	No.
Not followed	1	3	2	6
Unimproved	..	3	..	3
Improved	28	37	10	75
Clinically well	37	14	7	58
Dead	1	17	4	22
Diagnosis only	8	8	1	17
				181
Group 4				69
Total				250

Table 9 shows the duration of time of the whole illness, or the time during the observation of the case plus the history of kidney trouble, in sixty-one cases. Only such cases are taken from our total number as have had trouble over three years.

CONCLUSIONS

1. The prognosis of chronic interstitial nephritis is favorable when patients can be placed under proper conditions.

2. Many cases of so-called interstitial nephritis are not true disease of the kidneys, and often these patients have no return of the abnormal urinary secretion.

3. Patients with chronic interstitial nephritis, with good vascular and cardiac compensation, may live comfortably, and indeed, enjoy good health, for twenty-five or thirty years, and probably longer.

TABLE 8.—GROUPING OF FORTY-SEVEN PATIENTS STILL UNDER OBSERVATION

Observation	Groups 1	2	3	No.
From 3 to 5 years	11	9	4	24
From 5 to 10 years	5	5	1	11
From 10 to 15 years	6	3	1	10
Sixteen years	..	1	..	1
Eighteen years	1	..	..	1

TABLE 9.—DURATION IN SIXTY-ONE CASES

Duration	No.
Under 10 years	25
From 10 to 15 years	25
From 15 to 25 years	7
From 25 to 30 years	3
Thirty-five years	1
Total	61

4. Such patients may reach an arrest of the disease, they may be clinically well, and can be classified as apparently cured, quite as surely as in other chronic diseases.[2]

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[2] Since the completion of this paper, report has come of the death of one more patient in Group 2.

ABSTRACT OF DISCUSSION

Dr. Alexander Lambert, New York: There are many conditions grouped under nephritis which do not rightly belong there. Dr. Barlow has shown how markedly different are the conditions and course of the affections due to acute infections or injuries of the kidney and those due to chronic conditions which show arteriosclerosis. The charts show in asthma, for instance, that the dyspnea of acute nephritis is a very different condition from the same symptom in the cardiovascular affections of the kidney. You can secure more improvement in the acute than in the chronic cases. It is curious that if a man lives for from five to fifteen years sick, after standing that strain he will stand a better chance of living for twenty-five years. In the acute affections, if the patient survives he is in a much better condition for recovery than if the blood vessels are injured. The charts are beautiful in a pictorial way. The kidneys are virtually a pair of filters. If they are handed something that injures them, metabolic cobblestones when they are fit to handle only metabolic sand, they cannot handle them and the kidney is injured. One must remember the more specialized the cells the less do they possess general defenses; they are more liable to be injured because of their special character. The great number of the mixed class or the class of vascular sclerotics are the ones that have so much to do with the metabolic changes occurring from the action of the thyroids and the liver. We do not know the cause of the uremic poison and we do not know where the metabolic injury lies, but it is there even when the kidneys are doing their work. There is something back of it all. You may see it in the dry skin, the chippy nails; you may call it gout if you please; it is the same as any hypothyroidism, which may improve when the patient is fed on thyroid. It is a question as to what you can do for these patients. Dr. Barlow has brought out very clearly the fact that their environment influences these patients more than it does the normal individual. No patient is more rapidly injured by little things than nephritics. They do well at equable temperatures where extremes do not occur. They do well if they are willing to exercise self-control both in food and drink, and they do ill if they do the reverse. The ones that have the cardiac troubles and the vascular troubles are the ones doubly struggling against the two injuries, as these charts show. A study of these charts is well worth the time, because they show very clearly the clinical symptoms and the clinical conditions brought before us. We have not solved the problem as to what is behind nephritis. These charts show the prognosis, when it is good and when it is bad.

Dr. Philip King Brown, San Francisco: At the Southern Pacific Hospital in San Francisco a large number of young males enter the hospital for all sorts of diseases and injuries. In a study of the records of the hospital for the last two years, covering six thousand admissions, Dr. Cummins and I have tabulated the cases of albuminuria with casts, separating out as cases of chronic interstitial nephritis those with blood pressure much above normal. We have tried to find out from the comparative study of the etiology and functional kidney tests of the patients who had high blood pressure and could be classed as chronic interstitial nephritis, and those with low blood pressure, what the relation was between these classes among workingmen and the prognosis in each class. Our results differ from Dr. Barlow's, which only emphasizes the point he has made, that if you can surround these patients with the proper environment, mild climate and proper food, with light or no work, life can be much prolonged. In our cases, we find that no working man has lived longer than five years after the diagnosis has been made. This striking difference seems to me to be entirely due to the fact that we have to deal with a lower intelligence, limited means, and it requires greater effort for these individuals to live properly. It has been the routine of the hospital of late to study the Wassermann reaction in every case, and we find the cases of chronic interstitial nephritis in which syphilis is an etiologic factor are very much less amenable to any kind of treatment. Contrary to the accepted law, we administer to such patients considerable quantities of salvarsan, together with other antisyphilitic remedies, without influencing for the better the course of the disease. In established cases of arteriosclerosis, in which the pressure is low, the appearance of an acute infection has impressed us as influencing decidedly the development in the kidney of further interstitial changes. Some of our patients that have entered the hospital with infected wounds, for example, have undergone striking interstitial changes, the blood pressure increasing from normal or less to away over 200. We do not believe that a man with interstitial nephritis can continue his work safely. We have studied our cases with reference to type of labor. Only with clerks and others whose occupation is sedentary can the length of life be prolonged to any extent. Most of us have to do with individuals whose incomes are limited and dependent on their work, and while I believe strongly that bad prognoses are not necessarily to be made, I do feel that for the working man the best therapy is a change of occupation to something quite mild, sedentary if possible.

Dr. Joseph S. Cipes, Albuquerque, N. M.: Strong as this paper is, I notice that the cases in the fourth series receive little attention. This, I believe, is due to the fact that when we have a patient suffering with pulmonary tuberculosis and we notice a slight edema or a few symptoms of nephritis, we think there is no use trying to do anything for him. A good many cases that are prognosticated in that way, turn out just contrary to the prognosis given by the physician. The bad prognosis given is due largely to negligence or carelessness in making the diagnosis. When nephritis complicates tuberculosis, it is our duty to find out the exact type of the condition. Chronic parenchymatous nephritis, when found complicating pulmonary tuberculosis, usually results fatally. Chronic interstitial nephritis, however, when it follows tuberculosis, is often not fatal. The patient may live a number of years after he has developed an interstitial nephritis. It is a very easy matter to differentiate the two. The differentiation can easily be made by the administration of methylene blue. When administered to a patient in a case of chronic parenchymatous nephritis, the secretion of the methylene blue is usually retarded, whereas in interstitial nephritis it is excreted just as if the patient had no disease of the kidney.

Dr. W. Jarvis Barlow, Los Angeles: I was very glad Dr. Lambert brought out the point of the duration of the disease. If the patients stand the trouble from two to five years or more, they may go on indefinitely under the right supervision and the right care of themselves. I think this is brought out also in what Dr. Philip King Brown said of his statistics of working men. He tells us how very different are their results from those presented here, and to be frank with you I thought our results would be somewhat the same. We were very much surprised to find that our results tabulated as they have. It may be explained by the fact that the cases belong largely to the leisure class, with the opportunity to rest and take care of themselves. They were not among the working class. Perhaps 75 to 80 per cent. were able to settle down and take proper care of themselves. And why should not the results in such cases be better than in the case of the working man?

Progress.—We are gradually acquiring through the natural development of the processes of medical growth a system for the scientific management of disease. The past is full of stimulating traditions; the present, filled with the grains of precious wisdom that have been extracted from the mountains of theory and conjecture; and we accept the truth that in the future what we now worship will be swept away in the melting-pot of scientific ardor. But in admitting our limitations, we affirm with greater confidence our optimisms. It is only when harassed and perplexed that men learn; "strength grows out of weakness."—Everett A. Bates, M.D., *Boston Med. and Surg. Jour.*

PRENATAL CARE

DEDUCTIONS FROM THE STUDY OF THREE THOUSAND FOUR HUNDRED AND SIXTEEN CASES *

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The infant mortality statistics in the New York Infirmary for Women and Children seem worth publishing at this time when prenatal care is receiving so much attention, partly because we have had a regular prenatal clinic for over twenty years, and also because the results show a gradual general improvement, following increased care and improved facilities in the clinic.

The accompanying table shows statistics of the stillbirths and the deaths, within two weeks, for the last eight years since the rebuilding of the hospital.

MORTALITY STATISTICS FOR THE PAST EIGHT YEARS

Year	Infants Born	Still Births	Per Cent. of Births	Deaths First 14 Days	Per Cent. of Those Born Alive
1907	146	5	3.4	9	6.38
1908	280	12	4.2	10	3.7
1909	357	19	5.3	9	2.6
1910	374	15	4	9	2.5
1911	523	26	4.9	10	2
1912	552	14	2.5	13	2.4
1913	587	20	3.4	11	1.9
1914	597	15	2.5	18	3
	3,416	126	3.6	89	2.7

Total mortality, 215, or 6.3 per cent.

Our total percentage of stillbirths is 3.6 as compared with 4.29 per cent. in Sloane Hospital and 5.22 per cent. in the Universitäts Frauenklinik in Munich (quoted by Holt and Babbitt[1]). The percentage of deaths in the first fourteen days is 2.7 as compared with the 3.1 per cent. in Sloane Hospital. The total mortality of 6.3 per cent. is perhaps not so much of an improvement over Williams' 7 per cent.[2] as our approach to his description of an ideal clinic should warrant. It is, however, a step in the right direction, and the fact that our mortality tends to decrease is encouraging.

The 215 cases were divided as follows:

Abortions (under 37.5 cm. or 1,500 gm.)	32
Premature (37.5 to 46 cm. or 1,500 to 2,500 gm.)	44
Full term (46 cm. or 2,500 gm. or over)	125
Development unrecorded	14

Exclusive of the thirty-two abortions, in thirty-four cases no heart was heard on admission and, of these, twenty-one fetuses were macerated. Thirty-nine of those born alive, or 1.1 per cent., died the first day; 2.1 per cent. (seventy-three) during the first seven days, and 2.7 per cent. during the first two weeks. The causes of early mortality, with the exception of one case in which the necropsy report gave meningitis, did not differ from the cause of stillbirth.

The causes of total mortality are:

Labor (forceps 27; cranitomy 3; rigid cervix 2; breech 13, with 2 impacted; long labor 7; shoulder 1; early induction 2; fibroid of cervix 1; polyp of cervix 1; flat pelvis with version 1; placenta praevia 14; prolapsed cord 12, with 2 pulseless; cord about neck 6; concealed or accidental hemorrhage 3)	93, or	43 per cent.
Syphilis	14, or	6.5 per cent.
Undetermined	28, or	13 per cent.
Deformity	19, or	8.8 per cent.
Prematurity and inanition	20, or	9.3 per cent.
Toxemia	7	
Asphyxia	6	
Nephritis	5	
Atalectasis	3	
Cerebral hemorrhage	4	
Endocarditis in mother	3	
From other causes	13	

The other causes were ten in number and were acute hydramnios, with labor induced, 2 twins) pertussis in mother 2, typhoid in mother 1, general infection 1, intra-uterine infection 2, intraventricular hemorrhage 1, meningitis 1, perisplenitis 1, hemorrhages into brain, lungs, liver, etc., 1, edema of the brain 1.

LABOR AS FACTOR

The largest of these groups deserves special mention. The percentage caused by labor, while not unusually large, shows possibilities of reduction. Unfortunately, most of these possibilities occur at the actual time of delivery and not in prenatal care. Here the question of personnel is a large factor, for we have a teaching hospital with a changing house staff. In ten of the cases of prolapsed cord, for instance, judgment and dexterity might have done much to save the fetus. In eleven of the cases of breech extraction, a slight delay or a false movement may have been to blame. Placenta praevia causes a comparatively large infant mortality, as, through fear of infection, we do not undertake cesarean section. The deaths incident to forceps deliveries might possibly have been lowered in private practice, but the figures here given include cases of dystocia from the cervix as well as from the bony pelvis. In some of these, delay may have been a factor through nonobservance of the earliest change in tone or rate of the fetal heart; in others, permission for cesarean section or induction was withheld; but the large majority were borderline cases—either flat pelves with a true conjugate of 8.5 cm. or justominor pelves in which the disproportion did not seem to warrant cesarean section. The question is often one for close consideration.

SYPHILIS

Our percentage from syphilis is comparatively small, 6.5 as compared to Williams' 26.4 per cent. The latter percentage is, however, due to the fact that of the patients composing the Baltimore clinic almost half are colored. Moreover, some patients in our undetermined class of 13 per cent. were probably syphilitic. In any case, making all allowances, it seems positive that treatment has lowered the mortality.

Cases of deformity, monsters, etc., except for the treatment of a possible underlying syphilis, offer no hope of reduction with our present knowledge. Unfortunately, even when syphilis is treated, the time is often too late to correct any embryonic defect.

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* Seen in the obstetric service of the New York Infirmary for Women and Children.

[1] Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the New-Born, A Report on Ten Thousand Consecutive Births at the Sloane Hospital for Women, New York, The Journal A. M. A., Jan. 23, 1915, p. 287.

[2] Williams, J. Whitridge: The Limitations and Possibilities of Prenatal Care Based on the Study of 705 Fetal Deaths Occurring in 10,000 Consecutive Admissions to the Obstetrical Department of the Johns Hopkins Hospital, The Journal A. M. A., Jan. 9, 1915, p. 95.

The cases of prematurity and inanition undoubtedly depend on poor home surroundings of the mother. Five of the twenty cases were twin births and naturally the infants had a poorer chance to survive, but the large factor is probably sociologic and through the clinic the social service is able to help in these cases.

CLINICAL MANAGEMENT

The prenatal clinic, as at present managed, is under the direct supervision of the attending obstetrician. The assistant in the department and the intern follow the cases. Complications, such as tuberculosis, endocarditis, hyperthyroidism, abscess, etc., are looked after in conjunction with the doctors of the other departments of the dispensary, as deemed advisable. We have no prenatal visiting nurses, but the social service cares for patients who seem in need. Medical instructions are given by the doctors.

Patients register at seven months, sometimes at six months; they make bimonthly visits till the end of the eighth month and weekly visits during the last month. Patients not reporting for a period of a month are debarred. The patient's history is taken at the first visit, especially as to history of past diseases, former labors or abortions, and health during present pregnancy. The physical examination, unless otherwise indicated, is obstetric only, consisting of external and internal pelvic measurements and abdominal palpation, mensuration and auscultation. In making the internal examination, the condition of the cervix and perineum is noted and any erosion of the former is treated.

Syphilis is conceded to be the largest single factor in prenatal death, and while we are not able to treat patients in the early months, every registered patient presenting any symptoms or giving any history suspicious of syphilis has a Wassermann examination and if complement fixation be positive, has a course of salvarsan. The history we most commonly get in positive cases is one of abortion, stillbirths, or children dying in early life—often of "infant's consumption."

Furthermore, accurate or at least careful pelvic measurements help to reduce the cases of dystocia, due to the bony pelvis, to a minimum, for while no one's judgment is infallible, early observation allows more intelligent treatment.

Routine urinalyses have enabled us to eliminate toxemia almost entirely, some of the seven cases being early inductions in patients not responding to treatment, others being emergencies. In albuminuria cases, the blood pressure is our main guide and where it remains increasingly high, in spite of eliminative treatment, labor is induced.

Finally, instructions as to personal hygiene and care, we believe, prevent many cases of septicemia and mastitis in mothers, with consequent good effect on the infants.

CONCLUSION

I believe we are repaid for continuing our prenatal clinic and striving to improve it; that it is one of the most important features of the obstetric department; that prenatal care, though it seem thankless, has very definite results, and that it is often by such painstaking attention that we accomplish most.

150 East Thirty-Fifth Street.

OBSERVATIONS ON INCIPIENT HYPERTROPHY OF THE PROSTATE

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The diagnosis of beginning prostatic hypertrophy is not always a simple matter, particularly in the hands of the general practitioner, and occasionally in the hands of the urologist. Especially is one apt to find these diagnostic errors in cases involving the nervous system, in which functional disturbances of the bladder are the prevailing symptoms. Such errors are liable to occur when one fails to remember that spinal cord disease often gives the first evidence of its existence by the development of disturbances in the urinary and sexual functions. In such cases, it is not to be wondered at that errors occur, but there can be no doubt that they can be reduced to a minimum, even to zero, if due precautions are taken.

CASE REPORT

A case of this kind, which occurred in my experience, illustrates this point rather strikingly:

The patient was a man, aged 49, married twelve years, the father of five healthy children. He had been perfectly well up to a year previously, when he noticed a weakening of the urinary stream, an increased frequency in the desire to urinate, and a delay in starting the stream. His family physician made the diagnosis of prostatic hypertrophy, and took him to a urologist for confirmation. The urologist performed a cystoscopy, found a prostatic enlargement, with bladder trabeculations, confirmed the diagnosis, and recommended prostatectomy. The patient, thoroughly alarmed at the prospect of a surgical operation for an ailment which was not giving him much annoyance, determined to seek another opinion, and thus came under my observation.

The patient was still a young man, physically and mentally, and when he stated that he came for the purpose of confirming the diagnosis and approving of the operative suggestion, the first thought was that this was a young man, indeed, to have his prostate removed, hypertrophy notwithstanding. Cystoscopy was not undertaken; I believe that cystoscopy is not necessary in the diagnosis of prostatic hypertrophy, when other diagnostic elements are available. In this particular case, hypertrophy did not appear probable after the following data were obtained: urine clear, residuum three-fourths ounce, urethral length 7½ inches, no nocturnal call to urinate. The prostate was slightly enlarged by rectum; there was no stricture in the urethra.

Physical examination added something useful to these unsatisfactory data. The knee-jerk was totally absent, pupils dilated unequally, slight Romberg present. Further questioning elicited the information that twenty years previously the patient had a penile ulcer, which soon passed away. He received internal treatment of some kind for about a year, but had not taken any since then. Wassermann, four plus.

With this information at hand, I made a diagnosis of incipient tabes dorsalis, and referred the patient to Dr. Joseph Fraenkel, who confirmed the diagnosis, and under whose care the patient has been doing very nicely for the past two years. At the present writing, the patient does not show any evidence of prostatic hypertrophy, except as stated above.

USE OF THE CYSTOSCOPE

This case teaches us several lessons. First, mere enlargement of the prostate as seen with the cystoscope does not necessarily demand immediate prostatectomy. This will be discussed later on. Secondly, the cystoscope, with all its great usefulness, still has its limitations, and one of these, in my opinion, is in the diagnosis of prostatic hypertrophy. I am conservative enough to rely on the clinical manifestations for the diagnosis of the senile prostate. Given a residuum in the bladder, an increased urethral length, increased desire and frequency, particularly at night, in a man of 50 or over, and the diagnosis is just as certain as any cystoscope can make it. What is objected to is not the use of this invaluable instrument, but its employment as a routine measure in making the diagnosis, when clinical evidence is available.

The literature need not be invoked to confirm the statement that the harm done by the use of the cystoscope in these cases has far more than counterbalanced the good derived by the information which it has furnished. False passages, infections and acute retention are among the sequelae of this practice of employing the cystoscope as a routine measure, in suspected cases of prostatic hypertrophy. Undoubtedly, when the diagnosis is not clear and further enlightenment is desired, the use of the cystoscope is not only permissible, but actually imperative; but the skilful urologist is distinguished by his ability to determine when the use of the cystoscope is merely permissible, and when it is imperative.

The third lesson which this case might teach, if we would learn, is that the physical examination and the serologic test are of the greatest importance in these cases. One might well ask, in this connection, Of what good is the knowledge that the prostate is enlarged intravesically and the bladder trabeculated, when one omits the examination for the knee-jerk, the Romberg, the pupillary reaction and the Wassermann? I think that it is of far greater importance to determine the presence of a spinal lesion and bring it under control, as far as possible, and thereby increase the power behind the urinary stream, than to ignore this possible condition and attempt to relieve the situation by immediate extirpation of the prostate, declared guilty on the sole evidence furnished by the cystoscope.

This brings us to the third point of interest, namely, Should the prostate be removed immediately just because of an enlargement of one or more of its lobes? A search through contemporaneous literature offers very little enlightenment on this question. Writers on prostatic hypertrophy, as a rule, pay more attention to the subject of how to operate than when to operate. Occasionally one finds a vague suggestion that has more or less bearing on this moot point.

From the purely academic and theoretical point of view, it would appear that every prostate showing an enlargement into the urethra or bladder ought to be removed without delay, for surely it will have to be accounted for at some later date, when the patient's general condition may not be so good as when the enlargement is first discovered. On the other hand, when one considers the risk to life attached to the operation, and the frequent unhappy sequelae after operative recovery, one feels that there ought to be something more than mere enlargement to justify so formidable an operation as prostatectomy. In the ultimate analysis, this question is decided, each case on its own merits, by the surgeon and the family physician, for the question of operation must be determined in every case on the existing conditions that call for relief.

So much has been said and written optimistically on the subject of prostatectomy that the general practitioner is apt to consider the operation rather lightly, and urge its performance as soon as the patient makes complaint of his urinary disturbances.

I feel rather keenly in this matter, because of my observations on the results attained after removal of the prostate. I have under treatment, at present, a man, aged 51, who had his prostate removed by an excellent surgeon three years ago, at the age of 48, by the perineal route. At that time, for six months previously he had been complaining of increased frequency of urination and slowness of the stream. He had 1 ounce of residuum, and voided once during the night. Operation was advised and accepted, with the result that the man has become totally impotent and has absolute incontinence of urine, being incapacitated for business because of the persistent odor of urine about his person, and his life has been made miserable generally. In all other respects he is still a fairly young, healthy man, with not a gray hair on his head.

It would appear to have been wiser to give this man an opportunity to rid himself of his symptoms in some manner other than by radical operation so early in life. Prostatectomy is inherently a procedure that should be adopted when other measures fail to afford relief. It is not the first remedy to think of, but the last. When it is clear that palliative measures will not offer relief, prostatectomy is the only remedy that can be advised.

It must not be assumed for a moment that I am advocating the adoption of a catheter life as a prelude to prostatectomy. To the contrary, the permanent use of the catheter for the emptying of the bladder is an anomaly in these days of progressive surgery. Indeed, I am firm in the conviction that the time for prostatectomy has arrived as soon as the catheter has become necessary for emptying the bladder. But that does not mean that prostatectomy is demanded the moment an enlarged prostatic lobe has been discovered. It simply means that prostatectomy is demanded and made necessary when it is seen that the bladder is incapable of emptying itself of its contents. In other words, the indication for operation is not found in the enlarged prostate per se, but in the disturbance of function which such enlargement produces. Surely a man with a prostate as large as a fist is no worse off than his neighbor with a normal prostate, so long as he empties the bladder of its contents and thereby prevents the accumulation of residual urine. Why not give the incipient hypertrophied prostate a chance? We have all seen instances innumerable in elderly men, in which the prostate is large without any or only a slight disturbance in the urinary function. In these cases, the bladder wall is hypertrophied and has become so in response to the increased obstruction at the vesical neck. But if such a bladder empties itself with reasonable satisfaction, it would seem only proper to conserve the prostate and encourage the bladder to continue its work.

This is a very important matter, and deserves greater consideration than it usually receives. It is a problem worthy of our best thought. For several years I have been working along these lines, and I am convinced that prostatectomy might be avoided in many instances, if proper attention is paid to improving the condition of the bladder and the prostate.

At Beth Israel Hospital and in private practice, we have had a large number of incipient prostatics, as they might be termed, who have been treated with the view of increasing the bladder function and thereby counteracting the obstructive tendency of the enlarged prostate. It has been found that in many cases the prostate reaches a certain stage in the hypertrophic process, and then comes to a standstill. In these cases, there may be an ounce or two of residual urine, the urethral length may be one-half inch longer than normal, and the cystoscope may reveal a decided prostatic enlargement, and possibly some trabeculation of the bladder mucosa. But the patient is in a fairly comfortable condition, arising at night once or probably twice to void urine. Patients have gone on this way for five or six years, and sometimes longer, without any increase in the obstructive symptoms, and consequently without any urgent necessity of removing the prostate.

If at any time the obstructive symptoms become more persistent and urgent, prostatectomy is advised as the only means at our command which will restore the urinary function as nearly as possible to its previous condition. But so long as the patient can be kept in reasonable comfort without resorting to the catheter life, operation is not recommended.

TREATMENT

Our treatment includes the administration of a urinary antiseptic, keeping the bowels open, abstinence from alcoholic and sexual excesses, emptying, and irrigating and stretching the bladder once or twice weekly. We find that stretching the bladder gently by filling it to its maximum capacity is of great value, as it stimulates the bladder walls, very much in the nature of massage, thereby maintaining its ability to meet for a long time the increasing demands made on it by the obstructing prostate. Alcoholic and sexual temperance are of great importance in this connection, for we have found that an unusual indulgence will often bring about a sudden increase in the obstructive symptoms. Moderation in all things is the watchword for the incipient prostatic.

CONCLUSIONS

The urinary symptoms associated with incipient prostatic hypertrophy are liable to be confused with functional disturbances of the bladder due to central nerve lesions, such as tabes dorsalis. Every patient with suspected prostatic hypertrophy should be carefully examined for evidence of spinal cord disease. The Wassermann test and the physical examination will often indicate that the urinary disturbances are due to central nerve disease, rather than to prostatic obstruction. The cystoscope is not to be used in the diagnosis of prostatic hypertrophy, unless the clinical data are insufficient. While the cystoscope is usually a perfectly safe instrument in the hands of the expert, it is potentially capable of doing much damage. The diagnosis of hypertrophy should be made on the clinical findings. Prostatectomy should be undertaken as a last resort, and not as a routine procedure. The bladder should be given an opportunity to compensate for the obstruction of the enlarged prostate. This can be encouraged by the application of hygienic measures tending to prevent congestion of the prostate and bladder. Massage of the bladder walls, by gently filling the bladder to its capacity, is extremely useful in stimulating compensatory hypertrophy. Prostatectomy is demanded as soon as a catheter is required to keep the patient in comfort.

113 East Nineteenth Street.

EXPERIENCES WITH THE SODIUM CITRATE METHOD OF INDIRECT TRANSFUSION OF BLOOD (LEWISOHN)

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During the last few years, attempts have been made by numerous workers to discard the direct method of transfusion by suture or cannula (Crile, Elsberg, Bernheim, Carrel) and to replace it by the indirect method on account of: (1) the technical difficulties in the former methods; (2) the time consumed in transfusing, which of course weighed heavily on surgeons, donor and recipient; (3) the impossibility of accurately estimating the amount of blood received by the recipient, and (4) the difficulty, at times encountered, in maintaining the flow of blood for a sufficient length of time, because of the occurrence of thrombosis in the donor's artery, notwithstanding excellent technic.

These attempts at improvement resulted in the indirect transfusion, performed by two groups of methods:

1. Those in which the blood was removed from the donor and transfused hastily into the recipient in small amounts repeatedly until sufficient blood had been transfused. This was done either intermittently (Lindemann) or continuously (Unger) by the syringe method, or by the use of larger paraffined vessels (Curtis, Kimpton). Haste was required in order to prevent coagulation.

2. Those in which substances such as herudin (Hooker, Satterlee), or more recently sodium citrate (Lewisohn), were mixed with the blood to prevent coagulation.

The last-named method would seem to be ideal, because it allows the use of a cheap, easily sterilizable fluid (2 per cent. sodium citrate); the blood remains fluid indefinitely, and can be transported; the amount obtained and transfused can be measured, and the transfusion becomes simplified to an infusion given with a glass infusion bottle and salvarsan needle or infusion cannula. Theoretically, however, there are objections to the method, because it adds something to the blood which is not normally present, it allows the blood to stand in the air outside the body for a certain length of time, and it allows the blood, a tissue which is normally in contact only with endothelium, to come in contact with foreign bodies (glass, rubber and metal). These objections do not pertain in direct transfusion (for example, the Crile method). Whether or not these objections are really valid remains for the future to show. The mortality statistics will decide this.

At any rate, Richard Lewisohn[1] reported twenty-two citrate transfusions on eighteen patients. These patients were transfused with amounts of blood varying between 150 c.c. in children and from 500 to 1,000 c.c. in adults. In no case was any fatality recorded, although they were most desperate cases.

It is the chief purpose of this communication to record the results obtained in three transfusions performed by the Lewisohn citrate method. It is interesting that in this small group we can compare in two of the cases the results of the citrate indirect method and the Crile direct method, as one of them had a citrate followed by a Crile transfusion and the other a Crile followed by a citrate transfusion.

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[1] Lewisohn, Richard: Surg., Gynec. and Obst., 1915, xxi, 37.

Case 1.—G. D., laborer, seen in consultation with Dr. Francisco, March 12, 1915, had been having painless passages of black blood from the bowel for four or five days. The hemoglobin was 25 per cent. Examination revealed general neurofibromatosis of the skin (von Recklinghausen's disease), no fever and epigastric tenderness. A clinical diagnosis of duodenal ulcer was made. Two days previously, the patient had been transfused with 375 c.c. of citrated blood by Dr. Francisco. After receiving 200 c.c. of blood, the patient became nauseated, retched, his face assumed a drawn expression, cold sweat appeared, and the pulse became thready. He rapidly recovered, and the transfusion was completed. One hour later he went into profound shock, from which he recovered in two hours, and voided claret-colored urine with relief. He was removed to Trinity Hospital, a donor was procured, and I performed a Crile direct transfusion, raising the hemoglobin from 25 to 55 per cent. The duration of the operation was four hours. The patient, previously almost moribund, became quite conscious, and talked logically.

Exploratory laparotomy by Dr. Sharber, one hour later, through an upper median abdominal incision, revealed the stomach and duodenum negative for ulcer. On the anterior aspect of the second part of the duodenum was a firm subperitoneal mass the size of a small olive. It was easily enucleated and the peritoneal rent closed. In the lower part of the ileum, about 1 foot from the ileocecal valve, was another slightly larger subperitoneal mass, situated on the peripheral aspect of the intestines. It was treated in a manner similar to the former tumor. The rest of the abdomen was explored but found negative. In the removal of neither tumor was it necessary to enter the lumen of the intestine.

The patient seemed in good condition the next morning, and had 43 per cent. of hemoglobin, but died at 11 a. m. No claret-colored urine had been voided. According to the pathologic report, the tumor of the ileum was a fibromyoma; and that of the duodenum a fibromyosarcoma. No nerve fibers were shown in Weigert preparations.

Apparently the direct transfusion was successful in this case, while the indirect was not only unsuccessful, but also accompanied by almost fatal shock.

Case 2.—Mrs. J. C. P., seen at Trinity Hospital in consultation with Drs. Sharber and Rieger, was anemic, owing to the bleeding of a fibroid uterus. The hemoglobin was 38 per cent. On this patient, July 13, 1915, I performed a transfusion by the citrate method with 500 c.c. of citrated blood obtained from her husband, whose hemoglobin was 100 per cent. The duration of the operation was fifty-five minutes. The hemoglobin of the recipient rose at once to 58 per cent. One hour later moderate shock followed, but was easily combated, and the temperature rose to 102.6. The next day after purgation and preparation for operation, the hemoglobin was 75 per cent. None had appeared in the urine (by the guaiac test). A supravaginal hysterectomy and bilateral salpingo-oophorectomy was performed. The hemoglobin twelve hours after operation was 60 per cent.

Aside from the combatable shock, the citrate transfusion was unusually successful.

Case 3.—W. W., woman, was admitted to the hospital July 1, with symptoms of sudden intra-abdominal hemorrhage. When seen there in consultation with Dr. C. R. Sharp, the symptoms had somewhat abated. July 3 the hemoglobin was 60 per cent. An indefinite mass was felt in Douglas' culdesac. Menstruation had been irregular. A clinical diagnosis of ectopic gestation with intra-abdominal hemorrhage was made.

The patient was comfortable until the morning of July 5, when she again had signs of hemorrhage. Dr. Sharp performed a laparotomy for ectopic gestation; the right tube and ovary were removed; the patient received two intravenous saline infusions on the operating table, and was removed to the ward in a critical condition. The hemoglobin was 43 per cent. Within two hours I performed a Crile direct transfusion, using the patient's son as donor, and raising the hemoglobin to 51 per cent. The duration of the transfusion was two and one-half hours. No claret-colored urine was voided. The patient apparently did well for one week, but for the next few days had been looking ill. July 16 the hemoglobin was 52 per cent. A citrate transfusion was done with the same donor as before and the same flasks of citrate and saline that had been used in Case 2. Three hundred and fifty c.c. of blood were drawn. As soon as 100 c.c. had run in, the patient became restless and cyanotic, and the pupils dilated widely. She recovered from this, and 100 c.c. more were allowed to run in when she collapsed completely; her mouth twitched, the pupils dilated, the pulse and heart sounds became imperceptible, and cyanosis ensued. The transfusion was stopped. The hemoglobin had risen to 62 per cent. She was given extreme stimulation, but ceased at the end of six hours.

Both the 2 per cent. sodium citrate and the 0.9 per cent. sodium chlorid solutions were made of freshly distilled water and autoclaved at once at 20 pounds' pressure for thirty minutes.

These case reports show that we are not yet in a position to discard the direct for the indirect transfusion. In spite of the difficulties in technic attending the former, I believe it would be better to obtain the services of one skilled in arterial surgery and eliminate such a percentage of reactions (shock) as 100 per cent., and of mortality as 33⅓ per cent. There is no reason to believe that hemoglobinuria may not occur with either type of transfusion with equal frequency; in Case 1 it was responsible for the failure of the citrate method, although neither hemolysis nor agglutination occurred in vitro (Dr. Francisco). Having had an experience of a large number of direct transfusions, I can say that shock is a negligible factor, that infarction occasionally occurs (lung, kidney), and that hemoglobinuria is quite common and can occur even when the tests in vitro are negative.

I have seen tremendous reactions occur after transfusion of cases of bacteremia, possibly due to bacteriolysis. But a fatality in a case of secondary anemia, following direct transfusion by any method whatsoever, I have never yet witnessed.

Therefore, I would heartily condemn any indirect method that depends on the addition of some substance, such as sodium citrate, which will prevent the coagulation of the blood to be transfused.

178 Eighth Avenue North.

American Hospital at Chefoo.—The hospital of the American Presbyterian Mission at Chefoo, China, was completed in the summer of 1914 and is said to rank with the best hospitals in the larger cities of China. It is described by A. Krisel, a student at the mission, in U. S. Commerce Reports. It is situated on a hill overlooking the harbor of Chefoo and has grounds which cover 4 acres enclosed by a high stone wall. The buildings consist of the hospital, a dispensary, isolation wards for men and women, a morgue and a water pumping plant. The total cost of the hospital, including the equipment, was about $50,000 gold. It is built of brick and stone and is three stories high. It measures 160 by 128 feet and there are 8 ward rooms and 8 private rooms with a total of 35 beds; the capacity can be increased to 50 beds, accommodating about 400 patients in the year. The hospital building is heated by a low pressure steam plant and has electric lights. A Roentgen-ray apparatus has been purchased in the United States. Water is secured from a bored well 200 feet deep; wastes are disposed of by the septic tank system. The hospital had, at the time of the report, two foreign and one Chinese physicians, one foreign and one Chinese female nurses and eight Chinese male nurses. It was then running at about one third its capacity.

STUDIES ON THE LOCALIZATION OF CEREBELLAR TUMORS

III. POSTERIOR NEW GROWTHS WITHOUT NYSTAGMUS *

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INTRODUCTION

The purpose of this study has been to determine the proportion of patients with certified subtentorial new growths who have shown no nystagmus previous to operative treatment.

Practically all authorities agree that nystagmus is a valuable localizing sign in diseases of the posterior cranial fossa. To this category belong especially lesions of the cerebellum, the cerebellar peduncles, the vestibular nerves, the neighboring nuclei and the labyrinths. When general pressure symptoms suggest the presence of a tumor, nystagmus assumes more importance still, for it is recognized that the occurrence of this sign in a patient with symptoms of subtentorial new growth argues in favor of an extracerebellar or intracerebellar neoplasm. Stewart and Holmes[1] hold that this sign is almost invariably present in every case of cerebellar tumor at one or another time.

Occasionally, however, in patients of this type no discernible rhythmic movements of the eyes are found on repeated investigation. Though frequently other features of the examination suffice for purposes of diagnosis,[2, 3] there are instances in which the localization of an intracranial tumor in the posterior fossa is a very difficult problem.

A case in point recently came to my attention (table, 2320). The patient was examined repeatedly and by different observers, but no suggestion of nystagmus ever was noted. The picture as a whole was quite obscure. A tentative diagnosis of subtentorial tumor finally was made from the rapid onset of pressure signs (advanced choked disks, areas of absorption and enlarged venous channels in the roentgenograms, etc.) and the history of some disturbances in gait. There were no further significant localizing signs. Operation disclosed a solitary, median tubercle of the cerebellum measuring approximately 3 cm. in diameter.

When confronted with problems of this sort it is a matter of some importance to know the relative proportion of patients with certified cerebellar tumors who show no nystagmus previous to operative treatment. With information of this nature conclusions may more easily be drawn regarding the advisability of suboccipital exploration.

The records used in this analysis are from patients with tumors in the posterior fossa who have appeared in the neurologic services of Dr. Cushing at the Johns Hopkins Hospital previous to September, 1912, and at the Peter Bent Brigham Hospital since that date. Most of the cases in the latter group were personally studied by me. Of several hundred such cases only those—fifty-one in number—in which the new growths were localized at operation or at necropsy have been used for this report. In addition, for purposes of comparison, the records of forty-one patients from the latter clinic with verified supratentorial tumors have been analyzed for the presence or absence of nystagmus.

Practically all of the patients were studied by more than one observer. This method of checking up the routine examinations is significant, particularly for the patients reported as showing no nystagmus.

As Wilson and Pike[4] have pointed out, the word "nystagmus," in its present usage, is an indefinite term covering various types of ocular movements arising from lesions in diverse parts of the nervous system. Though these have been frequently differentiated into several distinct types, English writers have generally applied the term to oscillations of the eyes without distinction in regard to the variety of the movements. In this analysis no patient has been classified in the group without nystagmus if jerks were discovered at any time exceeding physiologic limits.

CASES OF CEREBELLAR TUMORS WITHOUT NYSTAGMUS

Of fifty-one cases of verified subtentorial new growths, there were eleven in which no nystagmus was discernible previous to operation. Nystagmus was absent in one additional case on repeated examination up to the day of exploration (table, 357). For purposes of comparison these are presented in the accompanying table.

The lesion concerned in eight of the cases was a glioma or a gliomatous cyst. In three there were tuberculomas, two being solitary. As regards the site of the new growths, it is seen from the table that they involved practically all portions of the cerebellum. Either the right or left hemisphere was affected as a whole or in part in six cases. The tenth and eleventh patients showed an involvement of both the vermis and an entire hemisphere. In the twelfth the lesion affected the deeper, anterior portion of the vermis and the right lobe. It is noteworthy that in no instance was the cerebellopontine angle primarily involved.

The degree of intracranial pressure varied widely among these patients. From a case with no measurable swelling of the optic nerve head and only moderate tension at operation, the pressure ranged to one with advanced choked disk and extreme herniation of the cerebellum into the spinal canal.

Accessory measures for eliciting nystagmus were tried in three of the patients—moving the head as first suggested by Oppenheim,[5] and using opaque spectacles as recommended by Bárány.[6] No success attended any of these tests.

The importance of making repeated observations is well shown by Case 357, in which a fine nystagmus finally appeared just previous to the operation.

The records of two patients illustrate how nystagmus which has been absent during one period of study may appear in later examinations subsequent to a suboccipital operation. Patient 30,000 on the second admission and Patient 357 on the second and third admissions had characteristic rhythmic movements of the eyes.

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* From the Surgical Clinic of the Peter Bent Brigham Hospital, Boston.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Stewart and Holmes: Symptomatology of Cerebellar Tumors, Brain, 1904, xxvii, 522.

[2] Grey: Studies on the Localization of Cerebellar Tumors: 1. Staggering Gait, Limb Ataxia, The Romberg Test and Adiadococinesia, Jour. Nerv. and Ment. Dis., to be published.

[3] Grey: On Localization of Function in the Canine Cerebellum, Jour. Nerv. and Ment. Dis., to be published.

[4] Wilson and Pike: The Mechanism of Labyrinthine Nystagmus and Its Modification by Lesions in the Cerebellum and Cerebrum, Arch. Int. Med., January, 1915, p. 31.

[5] Oppenheim: The Influence of the Position of the Head on Cerebral Symptoms, Neurol. Centralbl., 1910, xxix, 114.

[6] Bárány: Functional Examination of the Vestibular Apparatus, Verhandl. deutsch. otol. Gesellsch., 1911, xx, 37.

CASES OF CEREBELLAR TUMORS AND NO NYSTAGMUS

Patient	Lesion	Intracranial Pressure	Tinnitus and Hearing	Dizziness	Eye Muscles	Caloric Test	Nystagmus
2320 ♂ 22	Tuberculoma involving vermis principally; rt. hemisphere slightly. (Operation.) Tumor about 3 cm. in diameter.	Choked disks 4-5 D. Marked tension at operation. Extreme herniation of cerebellum into spinal canal. Int. hydrocephalus.	No tinnitus. Hearing good. Slightly less acute rt. ear.	Some. No rotation of objects or self.	No strabismus. Conjugate deviations good. Very slight restriction toward pt's. left.	Definite nystagmus from irrigation either ear. More marked from left. Normal pointing reactions. Reaction movements from both sides.	None with eyes directed forward, to either side, up and down, on changing position of and shaking head, or on breaking fixation.
1406 ♂ 45	Tuberculoma of left hemisphere. (Necropsy.) Tumor about 3 by 2.5 by 2 cm.	Choked disks 6-7 D. Marked tension at operation. Herniation into spinal canal.	No tinnitus. Hearing less acute in left ear.	None	No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
320 ♀ 6½	Glioma involving vermis and medial portion of each hemisphere. (Operation and necropsy.) Tumor 4.5 by 3.2 cm.	Advanced choked disks. Marked cerebellar herniation into spinal canal. Int. hydrocephalus. Pons and medulla distorted.	No tinnitus. Hearing normal.	None	No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
27738 ♂ 41	Cyst involving left hemisphere principally. (Operation.) Cavity about 5 by 4 by 4 cm.	Choked disks. Moderate tension of dura and cerebellum at operation.	No tinnitus. Hearing normal.	(?)	Slight weakness left internal rectus.	Definite nystagmus from irrigation either ear. Normal vestibular response, both sides.	None with eyes directed forward, up and down, or to the right. A few atypical jerks on looking to the left.
1444 ♂ 43	Multiple small tuberculomas involving vermis and left hemisphere. (Necropsy.) Largest 1 cm. in diameter.	Early choked disks 1 D. Moderate tension at operation. Probably slight int. hydrocephalus.	No tinnitus. Hearing about normal.	Marked dizziness. No rotation of objects or self.	No diplopia or strabismus. Some weakness left ext. rectus (?).	Marked nystagmus within very short time from irrigation either ear. Normal pointing reactions and reaction movements.	In two examinations atypical jerks of brief duration appeared only when looking to either side. Subsequently no jerks or nystagmus on directing eyes ahead, to the sides, and up and down. None on moving head and on breaking fixation.
1642 ♀ 64	Cyst (gliomatous ?) involving rt. hemisphere principally. (Operation.)	Very early changes in eye-grounds. Hyperemic. No elevation. Moderate tension at operation.	No tinnitus. Hearing normal.	Marked. No rotation of objects or self.	No diplopia or strabismus. Conjugate deviations good.	Marked nystagmus within very short time from irrigation either ear. Normal pointing reactions and reaction movements.	None with eyes directed forward, to either side, up and down, on moving head, or on breaking fixation.
51 ♂ 8	Cyst (gliomatous ?) involving rt. hemisphere principally. (Operation.) 42 c.c. fluid from cyst.	Choked disks with secondary atrophy. Int. hydrocephalus marked. Separation sutures. Marked tension at operation. Great herniation into spinal canal.	No tinnitus. Hearing normal.	None (?)............	Some diplopia. No strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
107 ♀ 3½	Cyst (gliomatous) involving rt. hemisphere principally, also vermis. Includes nearly whole rt. hemisphere. (Operation.)	Early choked disks. Marked int. hydrocephalus. Great herniation into spinal canal.	Tinnitus (?). Hearing about normal.	(?)	No diplopia or strabismus. Conjugate deviations good.		None with eyes directed forward, to either side, or up and down.
30000 ♀ 6	Large cyst (gliomatous) occupying left hemisphere principally. (Operation.)	Choked disks 5-6 D. Int. hydrocephalus. Marked herniation into spinal canal.	No tinnitus. Hearing less acute in rt. ear.	None (?)............	Paralysis left abducens. Very slight weakness rt. abducens (?).		None with eyes directed forward, to either side, or up and down.
357 ♂ 36	Glioma involving anterior portions, rt. hemisphere and vermis. (Operation.)	Choked disks 5 D. Marked tension at operation. Herniation into spinal canal.	Some tinnitus each ear. Hearing normal.	Fairly marked. No rotation of objects or self.	History of diplopia. No strabismus. Conjugate deviations good.	Slight nystag. from rt. ear; marked from left. Reaction movements only from left ear. Pointing errors to right both arms.	None with eyes turned in all directions on numerous examinations. Just previous to operation a fine, indefinite nystagmus appeared on looking to either side.
151 ♀ 9	Large cystic glioma involving rt. hemisphere principally, also vermis. (Operation.)	Advanced secondary optic atrophy. No elevation. Hydrocephalic configuration of skull. Marked pressure at operation. Int. hydrocephalus.	No tinnitus. Hearing normal.	None	No diplopia. No strabismus. Conjugate deviations good.		None with eyes directed forward, upward, or to her right. Some atypical coarse jerks on looking toward her left.
26387 ♀ 37	Cystic glioma involving left hemisphere principally. (Operation.)	Choked disk. Moderate tension at operation. Int. hydrocephalus.	Considerable tinnitus rt. ear. Later left ear. Hearing normal.	Some	No diplopia. No strabismus. Conjugate deviations good.	No nystagmus provoked on irrigating either ear. No subjective distress.	None with eyes turned in all directions.

Two of the patients complained of tinnitus and three showed a slight homolateral reduction of air conduction. These complications had appeared during the present illness in each case. Functional tests, however, disclosed no serious impairment of the eighth nerve in any instance.

CASES OF CEREBELLAR AND EXTRACEREBELLAR TUMORS WITH NYSTAGMUS

While tumors may arise in every possible position in the posterior fossa, it is convenient for purposes of localization and surgical treatment to consider them as occupying four principal regions, two within and two external to the cerebellum. In regard to the former we may speak, first, of the tumors which occupy a central position, that is, those which involve the vermis and more or less of the median portion of each lateral lobe; and, second, of those which lie wholly within one or the other hemisphere. In reference to the latter we may look on the new growths either as occupying the cerebellopontine angle, or as lying more or less between the posterior portions of the lateral lobes, dorsalward from the medulla and vermis.

There were thirty-nine verified cases of tumors occupying one or the other of these regions in which nystagmus was present previous to operative treatment. In twenty-two the new growths were intracerebellar; ten occupied a median position, while eleven lay in one lateral lobe. In one there were gliomatous cysts in both hemispheres. The size of the new growths varied greatly, from lesions with a diameter of a few centimeters to growths which replaced most of the cerebellum. An extracerebellar tumor was found in each of seventeen patients. Of these tumors thirteen occupied a unilateral cerebellopontine site and three a posterior, median position. In one additional case an infiltrating glioma of the vermis lay partially exposed in the posterior, median sulcus.

The degree of intracranial pressure in this group was found to vary within wide limits. In several instances the eye-grounds appeared to be practically normal. Operation disclosed only a moderate tension of the suboccipital structures. In the balance of the cases, on the other hand, the changes in the optic nerve-head varied from a few diopters swelling to an advanced choking of the disk. A number of the patients showed marked secondary atrophy. At operation corresponding differences were noted in the degree of internal hydrocephalus.

The experiences with the caloric test and the pointing reaction (Bárány) in these patients have been discussed in another place.[7]

THE PRESENCE AND ABSENCE OF NYSTAGMUS IN CASES OF TUMORS LYING ANTERIOR TO THE CEREBELLUM

Nystagmus is sometimes found in patients with new growths lying anterior to the cerebellum. As its presence here is always confusing, this has somewhat limited its usefulness as a sign of disease in the posterior fossa. The types of nystagmus in the two classes (that is, patients with tumors lying anterior to the cerebellum and those with cerebellar or extracerebellar growths) are occasionally identical. In each the movements may be fine and inconspicuous or they may appear as coarse, well-marked jerks. It is frequently impossible, even, to recognize the variety arising from direct irritation in the labyrinth; for, as Friesner and Braun[8] have pointed out, despite much that has been said to the contrary, the nystagmus due to cerebellar disease often cannot be differentiated clinically from that due to labyrinthine disease. Our experience has been that on the average the movements are coarser and more marked in individuals with lesions situated below the tentorium.

The fact that no nystagmus was noted in fully one third of the cases of intracerebellar new growths suggested a similar analysis of the cases with verified lesions lying anterior to the cerebellum in order to determine the relative frequency of this sign in the latter group.

Of forty patients with tumors situated anterior to the cerebellum, eight showed characteristic rhythmic oscillations of the eyes previous to any surgical interference. The new growths and their locations were as follows: one glioma, right occipital lobe; one glioma, right thalamus principally; one gumma, left temporal lobe; two cases of gliomatous cyst, one right and one left, parietal lobes; one solitary tubercle and one glioma, pons; and one hypophysial cyst.

The caloric test was used on three of the patients—occipital lobe glioma, thalamic glioma, and pontine tubercle. In each a typical nystagmus appeared following the irrigation of either ear.

There were thirty-two individuals in whom no nystagmus was detected; one gumma and one glioma, left frontal lobe; one gliomatous cyst, right frontal lobe; one endothelioma, pons; one glioma, left thalamus; two cases with a glioma each, and two with an endothelioma each, right parietal lobe; one glioma, left parietal lobe; two patients with a glioma each, and one with a gumma, left temporal lobe; one gliomatous cyst, one glioma, and one endothelioma, right temporal lobe; one glioma involving both thalami, right principally; one endothelioma, right temporoparietal region; one endothelioma at the foramen magnum; one metastatic melanotic sarcoma—multiple in cerebrum and cerebellum; and eleven patients with hypophysial strumas or cysts.

Seven of the patients were examined with the caloric test. Typical nystagmus appeared following the irrigation of each ear in six of these: unilateral thalamic glioma, frontal gumma, bilateral thalamic glioma, temporal endothelioma, endothelioma at foramen magnum, and parietal endothelioma. In the seventh—a pontine endothelioma—there was no response from either labyrinth. An involvement of the third, fourth and sixth nerve nuclei probably was largely responsible for this, as voluntary conjugate deviation of the eyes was practically impossible in all directions.

A study of the eye-grounds showed no uniformity in the ophthalmoscopic pictures. The changes in the nerve-head varied in both classes of cases (patients with and patients without nystagmus) from fundi with no measurable elevation to advanced choked disk. A similar variation was pointed out in discussing the cases of intracerebellar new growths (table, column 4).

DISCUSSION

In seeking an explanation for the presence or absence of nystagmus in patients of this class it is necessary to consider briefly the present conceptions regarding the mechanism of nystagmus. These, unfortunately are somewhat discordant. Bauer and Leidler[9] believe from their experiments on animals that nystagmus appears as a result of lesions in the region of Deiters' nucleus—the horizontal jerks more from the ventrocaudal part, and the vertical jerks from the oral part. In a similar way Bárány[10] assumes a nystagmus center here and explains the presence of this and certain other so-called cerebellar signs as the result of increased tension in the posterior fossa. Tumors in any location, as soon as they exert pressure on the posterior fossa, may give rise to an intracranial type of nystagmus, which may be transitory and of varying intensity or permanent and of constant intensity. Hesse,[11] however, questions whether we are justified at present in attributing such signs to the distant effects (*Fernwirkung*) of space-consuming new growths in the large and small brain.

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[7] Grey: Studies on the Localization of Cerebellar Tumors: II. The Pointing Reaction and the Caloric Test, Am. Jour. Med. Sc., 1915, to be published.

[8] Friesner and Braun: The Functional Tests of the Static Labyrinth in Neurological Diagnosis, New York Med. Jour., 1914, c, 369.

Wilson and Pike,[4] on the other hand, do not subscribe to this or to the various other hypotheses which recognize a nystagmus center. They conclude that an agency somewhere produces a deviation of the eyes from the primary position of equilibrium. In labyrinthine nystagmus this agency lies in the labyrinth. The internal rectus muscle on the side of the slow deviation and the external rectus on the side opposite are subjected to a greater strain than usual. This strain, resulting in the stimulation of the sensory or afferent endings of the eye muscles, sets up afferent impulses which are conveyed to the cerebrum over the afferent fibers in the third, fourth, and sixth cranial nerves.[12] These afferent impulses, in their turn, set up efferent impulses in the oculomotor cells of the cerebrum, which result in a quick, jerky contraction of the internal rectus on the side of the slow deviation and of the external rectus of the opposite side, with relaxation of the antagonistic muscles. The effect is a restoration of the eyes to the primary position. The complex motor mechanism of the eyes, these authors conclude, cannot be described in terms of circumscribed isolated centers, but must be defined in terms of an integrative system.

Mills and Weisenburg[13] regard the nystagmus seen with cerebellar lesions as due to an involvement of the vestibulocerebellar apparatus, probably of the parts connecting the vestibular nuclei with the deep nuclei of the cerebellum.

We are acquainted with the agency connected with the labyrinthine type of nystagmus of which Wilson and Pike speak, but as yet are more or less unfamiliar with that responsible for the development of nystagmus from other portions of the brain. Just what relation the cerebellum bears to the development of rhythmic movements of the eyes is at present rather uncertain. The cerebellum, it appears, has no pathways or centers indispensable for the appearance of either the slow or the quick component. From the investigations of Bauer and Leidler[9] it is clear that while destruction of parts of the cerebellar hemisphere and vermis never causes spontaneous nystagmus, lesions of the latter, nevertheless, result in an excessive excitability of the vestibular nuclei. This has led these workers, with Bárány, Neuman and others, to the belief that in cerebellar disease the nystagmus is due to an alteration in function of the vestibular nuclei or their connections with the nuclei of the eye muscles through pressure.

Oppenheim,[14] with Bruce, Wallenberg, Adler, Probst, Babinski, Horsley and others, assumes a nystagmus of cerebellar origin. Horsley,[15] for example, has shown that a careful electrical stimulation of the white matter in the neighborhood of the dentate nucleus, or of the body of the dentate nucleus itself, provokes a horizontal nystagmus toward the side excited. According to this view, as Babinski[16] has pointed out, nystagmus can be caused by either a labyrinthine or a cerebellar irritation. Rothmann,[17] on the other hand, from excitation experiments of his own, is led to dispute such an influence of the cerebellum on the eye muscles.

In considering the various hypotheses which have been advanced to account for the appearance of nystagmus in patients with intracranial tumors, it is evident that there is nothing in these views which will satisfactorily explain the absence of nystagmus in the series reported here. It has already been pointed out that of thirty-four patients with verified intracerebellar new growths, at least one third showed no nystagmus. Now in both of these groups—that without rhythmic movements of the eyeballs as well as that with them—the same differences were found in the degree of intracranial tension. In both there were patients with very little changes in the eye-grounds and with only moderate tension of the cerebral structures at operation; there were also patients with advanced choked disks and marked herniation of the cerebellum into the spinal canal. A similar variation was noted in the situation of the new growths.

On consulting the table it is clear that the absence of this sign cannot be accounted for by a paralysis of the eye muscles. In eight of the twelve patients practically normal conjugate movements were possible in all directions. Three showed a slight weakness of one external rectus muscle, but this degree of paresis is very frequently noted in patients who show characteristic oscillations of the eyeballs. In only one instance was a complete paralysis of the abducens found. Parallel movements of the eyes were possible here in each of the other directions.

Probably the most important evidence that the absence of nystagmus was not due—in a number of these cases at least—to an impairment of the fundamental mechanism of nystagmus is afforded by the results from the caloric tests. Caloric examinations made in six of the twelve patients showed well-marked nystagmus following the irrigation of each labyrinth in five.

On contrasting the group of subtentorial tumor cases having nystagmus with the group showing no nystagmus, it is evident that rhythmic oscillations of the eyes were found in every patient with an extracerebellar new growth. It should be mentioned, however, that the nystagmus was rather inconspicuous in the cases of posterior, median growths. In one instance the fine, rapid jerking of the eyeballs was noticed only when the patient looked toward his right side. The nystagmus in all of the cerebellopontine cases was well marked. Though the number of cases used in this study is comparatively small, one feature is sufficiently prominent to suggest a generalization. The results from the analysis would seem to indicate that when a patient exhibits a cerebellar tumor syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an intracerebellar localization of the lesion.

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[9] Bauer and Leidler: The Effect on the Vestibular Eye Reflex of Excising Different Portions of the Brain, Arb. a. d. neurol. Inst. a. d. Wiener Univ., 1912, xix, 155.

[10] Bárány: Further Investigations on the Relations of the Vestibular Apparatus to the Central Nervous System, Wien. med. Wchnschr., 1912, lxii, 3210.

[11] Hesse: The Rotation and Caloric Nystagmus, Ztschr. f. Neurol. u. Psych., 1913, xv, 377.

[12] Tozer and Sherrington: Receptors and Afferents of the Third, Fourth and Sixth Cranial Nerves, Folia Neuro-Biol., 1910, iv, 626.

[13] Mills and Weisenburg: Cerebellar Symptoms and Cerebellar Localization, The Journal A. M. A., Nov. 21, 1914, p. 1813.

[14] Oppenheim: Lehrbuch der Nervenkrankheiten, 1913, p. 1383.

[15] Horsley, quoted by Babinski and Tournay (Note 16).

[16] Babinski and Tournay: The Symptoms of Diseases of the Cerebellum and Their Significance, Tr. Internat. Med. Cong., London, 1913, Sec. XI, Part 1.

[17] Rothmann, quoted by Oppenheim (Note 14).

There are several explanations which assist in accounting for the presence and absence of nystagmus in patients with supratentorial new growths. Bárány[10] believes that in such cases it is due to pressure exerted on the nystagmus centers—in the region of Deiters' nuclei—by the tumors from a distance (*Fernwirkung*). When the growths are not space-consuming, however, and lead to no increased intracranial tension, rhythmic oscillations of the eyes do not appear. Another suggestion is offered by Bauer and Leidler.[9] They have shown experimentally that after cerebral hemisphere extirpations there is an increased excitability of the corresponding eye muscle nuclei. It is conceivable that certain cerebral tumors may lead to such a result.

Certain experiments of Wilson and Pike[4] are interesting in this connection. They removed various areas of the cortex, frontal, parietal, occipital, and temporal and also destroyed the subcortical ganglionic masses in cats, dogs and monkeys in an attempt to find some region in a hemisphere where a lesion will modify or abolish labyrinthine nystagmus. The only place where they obtained consistent alteration of the labyrinthine stimulus, and that only so far as the quick component was concerned, was in the region of, or adjacent to, the temporal lobe.

A review of the clinical findings in the patients with supratentorial tumors shows that both the quick and the slow phases of nystagmus may exist in patients with new growths occupying very diverse regions in the cerebrum. In six of the seven patients examined with the caloric test (no spontaneous nystagmus) characteristic rhythmic movements of the eyes appeared following the irrigation of either meatus. In the seventh patient there was almost a complete ophthalmoplegia. Similar results were obtained from patients who showed spontaneous nystagmus. The caloric test was used in three of this group and in each case typical nystagmus followed the stimulation of either labyrinth.

SUMMARY

Of the thirty-four verified cases of cerebellar tumor and seventeen verified cases of extracerebellar tumor, eleven showed no nystagmus previous to operation on repeated examination. All of the cases in which it was absent contained intracerebellar new growths—32 per cent. of the intracerebellar series. This suggests that when a patient exhibits a cerebellar tumor syndrome without nystagmus, the absence of rhythmic movements of the eyes points toward an intracerebellar localization of the lesion.

Among the members of both groups (that is, the group with and the one without nystagmus) there were marked differences in the degree of intracranial tension. In each group there were new growths which involved the vermis and others which replaced a part or the whole of one or both hemispheres.

Caloric examinations made in six of the cases in which there were no rhythmic movements of the eyes resulted in characteristic nystagmus from either labyrinth in five.

Of forty verified cases of tumors lying anterior to the cerebellum, eight showed nystagmus previous to operation. Caloric examinations made in seven of the cases without nystagmus provoked characteristic rhythmic oscillations of the eyes from either labyrinth in six.

These results indicate that in many cases of intracranial tumor the absence of nystagmus cannot be accounted for by an impairment of the fundamental mechanism of nystagmus.

THE DIAGNOSIS OF TUMORS IN THE POSTERIOR CRANIAL FOSSA *

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Our knowledge of cerebellar symptoms and of cerebellar localization has advanced considerably during the last few years, chiefly owing to the work of Babinski and Rothmann, but in comparison with *cerebral* symptomatology and localization this progress has not been great. This is mainly because clinicians have not studied their cases with sufficient care, and when diagnosing tumors in the posterior cranial fossa have been satisfied with gross diagnoses.

Recently one of us, with Dr. Mills,[1] in a paper on cerebellar symptomatology and localization, reviewed most of the literature on this subject, both foreign and American. In only a few cases was any attempt made to differentiate cerebellar symptomatology to any of the limbs or parts of the trunk, while a study of the pathologic reports was equally disappointing; most writers were satisfied with the assertion that either one or both lateral lobes or the vermis was implicated, there being few definite statements of the particular part of the cerebellum diseased.

It is advisable, therefore, briefly to state our views on cerebellar localization and cerebellar symptomatology. We have adopted the tentative localization advanced by Mills and Weisenburg. It is probable that many of their views are wrong; but it is necessary to make a start, and the localization advanced by them is perhaps as comprehensive as can be made at the present time. To arrive at a definite conclusion it is necessary for all clinical and pathologic reports to be accurate and complete, so as to leave no doubt as to what part of the cerebellum is implicated.

We believe that the chief function of the cerebellum is to synergize all movements of the body. Whatever symptoms are present, such as hypermetry, adiadokocinesis or tremor, result from loss of synergy. This asynergy can be detected in any part, or parts, of the body. It may be present in one limb, the limbs of one side, in the upper limbs and shoulder girdle, in the lower limbs and the pelvic girdle, or in all parts of the body. Not only that, but in the development of these symptoms it is possible to tell whether the lack of synergic movement in the upper limb, for example, is in abduction or adduction, or in upward or downward movement. The methods of elicitation have been carefully described in the paper previously referred to. We wish to emphasize here that it is possible to differentiate cerebellar asynergy in parts of the body.

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[1] Mills, Charles K., and Weisenburg, Theodore, H.: Cerebellar Symptoms and Cerebellar Localization, Including Kinematographic Observations on Cerebellar Phenomena, The Journal A. M. A., Nov. 21, 1914, p. 1813.

We have found the Bárány method of investigation of great value in the differentiation and elicitation of symptoms. By means of the caloric tests and the turning tests, it is possible to demonstrate by direct stimulation of the vestibular apparatus the presence or absence of certain phenomena. This subject was presented by one of us in association with Dr. I. H. Jones, before the recent meeting of the American Neurological Association in New York.

In presenting this subject, we first discuss lesions confined strictly to the cerebellum; second, lesions implicating the superior cerebellar peduncle; third, lesions involving the middle cerebellar peduncle; fourth, lesions implicating the inferior cerebellar peduncle; fifth, lesions of the cerebellopontile angle; and last, lesions invading the cerebellopontile angle secondarily.

We desire to emphasize that, to make an accurate diagnosis of a cerebellar lesion, it is necessary to take into consideration not only the cerebellar symptoms, but all other symptoms. We have been repeatedly impressed with this fact since our attention has been more especially directed to this subject. Often we have made a diagnosis of a lesion of the labyrinth, only to find the cerebellum implicated, and vice versa; again we have diagnosed cerebellopontile-angle tumors only to find that the angle was secondarily invaded by a lesion growing from the cerebellum. It has not been infrequent to diagnose lesions of the cerebellum when the tumor has been in the third ventricle and has involved the superior cerebellar peduncles secondarily.

DIAGNOSIS OF LESIONS STRICTLY CONFINED TO THE CEREBELLUM

In accordance with our views of cerebellar function, lesions of the cerebellum itself cause more strictly limited symptoms than those which invade any of the peduncles. Most tumors of the cerebellum are gliomatous and are of slow growth. The majority tend to invade the middle rather than the outer portions of the cerebellum, and as a consequence, the vermis is nearly always involved wholly or in part, in addition to one of the lateral lobes. We believe that in the superior vermis are centered the synergic movements of the upper trunk or shoulder girdle and in the inferior vermis the movements of the lower trunk or of the pelvic girdle. As a consequence there will always be in such lesions, in addition to disturbances in the movement of one or both limbs, alterations in the station and gait.

There is a great difference in the station and gait in those cases in which the shoulder or the pelvic girdle is implicated. In the shoulder girdle cases, both in standing and in walking the feet are not held widely apart nor is there a swaying of the pelvis. The chief difficulty is that the moment the patient attempts to stand or to walk, his trunk leans or falls forward, backward or to one side very markedly, and *much more so* than in the pelvic girdle cases, for in the latter, because of the inability to synergize the movements of the lower trunk with the legs, the difficulty in walking is much greater, the legs are held farther apart, and instead of the patient lurching to one side, forward or backward, the gait is more irregular, the body is held more erectly, and in walking the legs are projected in front of the patient, showing clearly the lack of synergic action between the trunk and limbs. When the shoulder and the pelvic girdle are both involved, it is sometimes almost impossible for the patient to stand or to walk without aid.

A very good way of differentiating shoulder and pelvic involvement is to place the patient on the floor on the hands and knees. While in such a position, if the pelvis be implicated, there will be very marked to and fro swaying of this part, the shoulders remaining practically still, whereas in the other type the pelvis is held steadily, but the head and shoulders sway and deviate to the side of the lesion.

In cases in which the vermis is implicated, the staggering is mainly forward or backward, rather than to one side, and of such cases, it is more marked in the shoulder girdle type. In our experience, if in addition to the involvement of the vermis, the lateral lobes are implicated, the sway of the trunk is to the side of the lesion, although it must not be forgotten that in a progressive cerebellar disease, the patient may learn, for example, to go voluntarily to the left to offset his staggering to the right.

In those instances in which the lateral lobes alone are implicated, the asynergic movements are present only in the limbs of the involved side: if in the superior lobe, in the upper limb, and if in the inferior lobe, in the lower limb. By direct stimulation of the vestibular apparatus it is possible to obtain, for example, a total lack of outward pointing or inward pointing, whereas this is not so readily demonstrated by the ordinary tests.

Nystagmus.—The question whether nystagmus should or should not be present in cerebellar lesions has by no means been settled. According to our views of cerebellar localization we place the synergic center for eye movements in the extreme upper portion of the superior vermis. It is a well-known fact that in chronic lesions strictly confined to the cerebellum, involuntary nystagmus may be present. One very marked case of this type has been carefully studied by means of moving pictures, and was referred to in the paper with Dr. Mills. In this case the nystagmic movements were constant and in all directions—upward, downward, laterally and in a rotatory direction. We regarded these ocular movements as an example of direct cerebellar ocular asynergy. Other examples of nystagmus are found in diseases of the Friedreich's ataxia type. Rarely involuntary nystagmus occurs in progressively developing tumors, but this is not the rule.

If, however, nystagmus be developed by voluntary movement, the lesion is probably extracerebellar. It is especially in these cases that direct stimulation of the vestibular tract demonstrates the true source of such nystagmus. If, for example, the right ear is stimulated by cold water, there will be obtained quick jerking movements of the eyeballs to the opposite side with a slow return to the same side. The slow recoil to the side of the stimulation is the cerebellar movement, while the quick jerk to the opposite side is the cerebral component. The same results will be obtained if the vestibular apparatus be stimulated by means of the turning chair.

In such tests the impulses go from the labyrinth by the vestibular nerve to the three paracerebellar nuclei — Deiters', von Bechterew's, and triangular nuclei—and thence to the nuclei of the third, fourth, and sixth cranial nerves by the posterior longitudinal bundle, and then to the cerebral cortex. If there be any interruption of this arc, normal nystagmus is not obtained. The location of the lesion will depend on the associated symptoms. If in the eighth nerve there will also be loss of hearing; if in the paracerebellar nuclei, no deafness, but there may be some implication of either the fifth, ninth or tenth cranial nerves, inasmuch as these nuclei are in the outer upper portion of the medulla. If the lesion is in the pons or crus, there may be in addition to the sensory and motor symptoms, involvement of either the seventh, sixth, fifth, fourth or third cranial nerves, with paralysis of associated ocular movement.

Apparently then, the conclusions to be drawn regarding ocular movements are as follows: Involuntary nystagmus is nearly always cerebellar, but voluntary nystagmus is the result of implication of those fibers which are in relation to the vestibular apparatus outside of the cerebellum.

General Symptoms.—The presence of cranial nerve symptoms, as of the seventh, sixth, fifth, ninth, tenth or twelfth, indicates that the lesion is extracerebellar. Dizziness with disturbance of hearing is the result of implication of the vestibular apparatus somewhere in its course and is not a cerebellar symptom. Involvement of the motor fibers, with paresis of the limbs, increased reflexes and Babinski, indicates that there is pressure on the motor apparatus and should not be expected in lesions strictly confined to the cerebellum, except in those cases in which the lesion is very large. As a rule, motor involvement indicates a pontile lesion or a lesion in the angle pressing on the pons. Headache, nausea, vomiting, and choked disk, are, of course, early manifestations, but only in those instances in which there is interruption in the flow of the cerebrospinal fluid, and generally indicate a lesion either in the crus or pons pressing on the aqueduct of Sylvius.

LESIONS OF THE CEREBELLAR PEDUNCLES

We possess little definite knowledge of the functions of the fibers in the cerebellar peduncles. It is supposed that the inferior and middle peduncles transmit impulses to the cerebellum, and that the superior peduncle transmits impulses from this organ. It is probable, however, that all the peduncles transmit impulses in both directions. It is also probable that the inferior peduncles are concerned chiefly with synergic movement of the lower limbs, and to a lesser extent of the upper limbs, the middle peduncle with the synergic movement of the trunk and head, and that the superior peduncles are mainly concerned with the association of cerebral with cerebellar functions. All this, however is theory, based somewhat on anatomic and physiologic facts, but not as yet supported by pathologic and clinical data.

In the literature there are a few instances of lesions confined more or less to one of the peduncles, but it cannot be said that our clinical experience is such that we can differentiate the asynergy resulting from lesions of the superior from those of the middle or inferior peduncles. From our present knowledge all we can say is that lesions strictly confined to any of the peduncles cause asynergic symptoms in all parts of the body and as a consequence we are compelled to make the diagnosis not on the cerebellar symptoms but on those associated with them.

There are instances in the literature in which so-called turning or rolling movements have been recorded in tumors of the middle and of the inferior peduncles, either toward or away from the side of the lesion. These cases, however, are not definite and cannot be relied on. There is, however, this difference in the cerebellar symptomatology of the different peduncles: Because of the anatomic relation of the superior peduncles, lesions of this part invade mostly both sides, the cerebellar symptoms being present all over the body, although rarely, as in the case reported by Mills[2] in which there was thrombosis of the superior cerebellar artery, the asynergy is limited only to the limbs on one side.

The middle cerebellar peduncles being more widely separated, such lesions are often unilateral, whereas tumors implicating the inferior cerebellar peduncle are almost always one-sided.

Tumors of the Superior Cerebellar Peduncles.—In most instances tumors invading these peduncles grow from the third ventricle through the aqueduct of Sylvius, often bisecting the cerebral peduncle and pressing on or destroying one or both red nuclei. In such cases the symptoms consist of a gradually developing paralysis of associated ocular movement upward, and if the lesion extend laterally, central disturbance of hearing on one or both sides, because of the involvement of the posterior corpora quadrigemina. There may be also partial weakness of both upper and lower limbs with the presence of increased reflexes and the Babinski phenomenon. The symptoms resulting from extension of tumors from the third ventricle into the aqueduct of Sylvius were discussed by one of us.[3] Since then we have seen a number of such cases both clinically and pathologically. Because of the preponderant cerebellar symptoms they are nearly always diagnosed as cerebellar, but with the gradual onset of paralysis of associated ocular movement upward the diagnosis is no longer in doubt.

Rarely, as in the case previously referred to,[2] there is thrombosis of the superior cerebellar artery. In such instances there will be loss of unilateral emotional expression in the face on the same side and disturbance of sensation for pain, heat and cold over the other side of the body.

Sometimes large tumors of the thalamus extend downward and implicate the peduncle on one or both sides. In such instances the diagnosis is difficult until the third nucleus becomes involved and with the presence of the paralysis of upward associated ocular movement the diagnosis can be made.

Lesions of the Middle Cerebellar Peduncles.—Tumors in this area are rare. Such lesions usually either extend from the pons into the cerebellum by means of this peduncle or grow from the cerebellum into the pons. Hemorrhages or a thrombosis often give limited symptoms. One such case is now under our observation. This patient, a physician of 45 years, suddenly developed numbness on the entire left side of the body with a complete motor right fifth nerve palsy and a partial weakness of the right sixth nerve. He had besides limited cerebellar disturbances in the limbs of the involved side which were best brought out by the Bárány tests. In this instance the diagnosis was made by the presence of the fifth and sixth nerve palsy on the side of the lesion, the sensory symptoms on the opposite side due to the irritation of the median lemniscus and the slight cerebellar asynergy on the side of the lesion.

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[2] Mills, Charles K.: Preliminary Note on a New Symptom Complex Due to Lesion of the Cerebellum and Cerebello-Rubro-Thalamic System, the Main Symptoms Being Ataxia of the Upper and Lower Extremities of One Side, and on the Other Side Deafness, Paralysis of Emotional Expression in the Face, and Loss of the Senses of Pain, Heat and Cold Over the Entire Half of the Body, Jour. Nerv. and Ment. Dis., February, 1912.

[3] Weisenburg, T. H.: Tumors of the Third Ventricle with the Establishment of a Symptom-Complex, Brain, 1910, xxxiii, 236.

The conclusion can be drawn that in lesions of the middle cerebellar peduncles the associated phenomena consist of the fifth or sixth nerve symptoms on the side of the lesion, with sensory and motor phenomena on the opposite side.

Lesions of the Inferior Cerebellar Peduncles.—Such tumors are very rare and we have never seen one *limited* to one or both of the inferior peduncles. We have, however, seen a number of tumors of the cerebellum in which there has been an extension of the growth into one or both peduncles. In such growths the associating phenomena, if the lesion extends into the medulla, should consist in implication of the vestibular tract, and disease of the ninth, tenth and twelfth cranial nerves.

Lesions of the Cerebellopontile Angle.—The diagnosis of tumors in this area as a rule is not difficult. We have encountered cases, however, in which such diagnosis had been made, only to find that this angle was invaded secondarily by tumors growing from the cerebellum and more rarely from the pons. The differential diagnosis is important from the surgical standpoint, for it is readily seen that tumors growing *from* the pons or cerebellum offer little hope for surgical removal.

Tumors growing in this angle are usually fibromatous and more rarely fibrosarcoma. We have encountered a number of cysts, but these are generally parts of gliomatous tumors growing from the cerebellum. Most tumors grow from the eighth, and more rarely from the seventh, fifth, or sixth cranial nerves, respectively. The first symptoms are usually referred to the cranial nerve from which the tumor grows and in the course of time the seventh, sixth and fifth nerves become implicated. Of course, the symptoms depend on the size of the growth. In small tumors no pressure is exerted on either the pons or cerebellum. In a well-developed case, besides the cranial nerve symptoms, because of the pressure on the pons, there are motor symptoms on the opposite side and more rarely sensory phenomena.

Because of the pressure on the anterior part of the cerebellum, both the superior and inferior surfaces are involved, this causing cerebellar asynergy of the limbs on the same side. In cases in which the angle is invaded secondarily from the cerebellum or from the pons, the cerebellar symptoms are always much more marked, and it is because we have not been sufficiently careful in the differentiation of the cerebellar phenomena that errors in diagnosis have arisen.

We wish to emphasize here that in the usual tumor growing from the cerebellopontile angle the cerebellar symptoms *are not very marked* and that unless the tumor is very great the asynergy will be limited only to the arm and leg on the side of the growth, and that if there is in addition to the cranial nerve symptoms cerebellar asynergy in the trunk and limbs on both sides, it is probable that the tumor grows either from the cerebellum or more rarely from the pons.

Of course, if the progress of the symptoms is carefully noted, in the latter type of case the cerebellar phenomena should occur first and the cranial nerve symptoms last. But unfortunately we are not always permitted a clear-cut history, and it is because of this that we desire to emphasize this important point in differential diagnoses.

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GALVANOMETRIC STUDIES OF THE CEREBELLAR FUNCTION *

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The object of this study has been to ascertain, if possible, the mechanism of the cerebellar function, as deduced from the phenomena consequent to its lesions. It will be necessary, therefore to formulate at the outset a clear conception as to which of such phenomena are essentially cerebellar in origin. The cerebellum is adjacent to so many important structures and forms such intimate connections with the vestibular system and its oculomotor tracts that many of its lesions, experimental, as well as clinical, but especially the latter, very frequently implicate these other structures, producing their corresponding symptoms. On reviewing the literature we find, therefore, that a number of symptoms have from time to time been ascribed to this organ which have not had their genesis in it at all.

THE CEREBELLUM AND SENSORIUM

Lesions of the cerebellum do not produce disturbances of sensibility, and if these are present, they are invariably due to the involvement of the sensory tracts or nerves found in its vicinity. This is attested by such a great number of observations that it may well be considered an indisputable fact.

What was said with regard to general sensibility applies with equal force to that type of sensation which is implied by the general term of the "muscular sense." As is well known, this type of sensation comprises all those sensory reactions which, originating in the motor organs and their accessories (tendons, joints, etc.), provide us with information as to their state of tension, their direction in active and passive movements, and incidentally aid us in the appreciation of our posture in space. The cerebellum has been thought to be the center of the muscle sense by such noted observers as Lussana,[11] Hitzig, Munk[12] and of late Lewandowsky, and the spinocerebellar tracts have been identified by them as the carriers of the so-called proprioceptive stimuli. It is an undeniable fact, however, that pure cerebellar lesions do not give rise to loss or impairment of the muscle sense and, if this is present, there is invariably found an associated lesion of the posterior columns or their nuclei.[13] Patients with cerebellar disease have complete orientation toward the surrounding world, are fully conscious of all changes in posture during active and passive movements and present no Romberg sign (swaying on being deprived of the aid of vision). As pointed out by Luciani, the dog deprived of a lateral lobe of the cerebellum even anticipates the disturbances that will ensue on walking or prehension of food, and to obviate a fall seeks out some support for the side of the lesion.

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* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* From the Hull Physiological Laboratories, University of Chicago.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

[11] Lussana, F.: Jour. de la physiologie de l'Homme, 1862, v, 418; vi, 1863, 169, etc.

[12] Munk, Quoted by André-Thomas: Cerebellar Functions, *English* Trans. by W. C. Herring, New York, 1912.

THE CEREBELLUM AND MOTILITY

The phenomena consequent to cerebellar lesions belongs to the motor sphere and not to the sensory. This is almost universally conceded now by both physiologists and clinicians. The disturbances manifest themselves, however, in such a large variety of phenomena, owing chiefly to concomitant lesions of other structures, that their interpretation has for a long time been exceedingly difficult. Of late, however, thanks to our increasing knowledge of the anatomy and physiology of the cerebellum as well as of its adjacent structures, this difficulty has been largely removed, and we are able to dissociate the true cerebellar phenomena from the others.

FORCED MOVEMENTS, NYSTAGMUS, ETC.

It is pretty definitely established that such phenomena as forced movements, the circus movements and rolling movements in animals and the so-called imperative movements in man, are not cerebellar in origin. And the same is true of the nystagmus, the conjugate deviation of the eyes and the characteristic attitude of the head so frequently observed after unilateral ablation of the cerebellum in animals and occasionally in cerebellar disease of man.

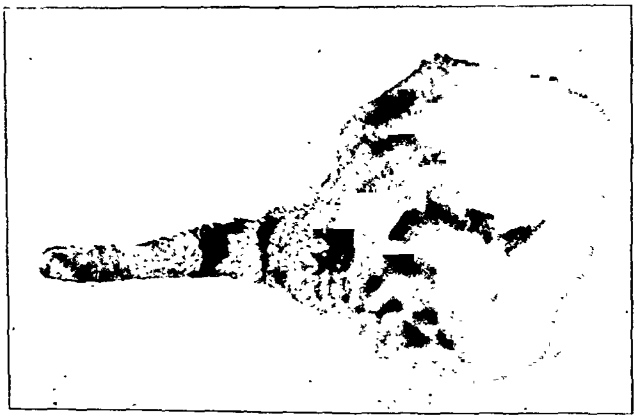

Fig. 1.—Cat after removal of left motor area of the cerebrum and right lateral lobe of the cerebellum. From photograph taken fifteen days after the first operation and fifteen days after the second. Note marked extension of right forelimb on prolonged standing. The extension is not due to a spasmodic condition of the forelimb, as it takes place gradually and is brought about by the weight of the body forcing the paretic limb out.

These phenomena are essentially vestibular in origin, being due to a lesion of the vestibular complex itself or its oculomotor tracts. Muskens,[14] who made an extensive study of these phenomena in their relation to the pathologic findings at necropsy, found that they are associated with lesions in the paracerebellar nuclei, the vestibulomesencephalic tracts in the posterior longitudinal bundle and the descending vestibulospinal tracts. They are, at any rate, not cerebellar symptoms. The whole lateral lobe of the cerebellum may be removed without producing the slightest indication of these phenomena. I have personally performed such operations in about twenty-five animals (dogs and cats) and can say without hesitation that forced movements as well as nystagmus are not cerebellar in origin. I have seen no instance of rolling movements or a tendency to it in pure cerebellar lesions. They were, however, extremely vehement and almost uncontrollable whenever there was an associated lesion of the vestibular system. These movements in my cases were invariably toward the side of the lesion in accordance with the results of Schiff,[15] Ferrier and Turner,[16] André-Thomas, and Muskens[14] in lesions of the cerebellum, and those of Bechterew[17] and Breuer[18] after section of the eighth nerve.

THE PHENOMENA OF CEREBELLAR LESIONS

The phenomena that are purely cerebellar in genesis are two, the ataxia and the tremor. I am using the term "ataxia" in its general sense to denote irregularity or perversion of muscular action without reference to its nature, and in contradistinction to loss of movement such as is found in paralysis. Personally I have never been convinced as to the existence of hypotonia in cerebellar lesions, a symptom on which Luciani laid so much stress. In my experience, which is in accord with that of Ferrier, it is very inconstant. I have noted it only in very extensive lesions, in lesions which have involved also the vermis and its nuclei. The nucleus tecti, as established by the morphologic studies of Weidenreich[19] and others, may be looked on as a part of the paracerebellar nuclei, which, from their rôle in the production of decerebrate rigidity (Thiele[20]) are known to dominate the tonicity of the body musculature. The presence of hypotonia in such severe lesions of the cerebellum is thus easily explained without attributing it to a disturbance of the chief function of the organ. The ataxia and tremor, on the other hand, are constant and marked, and found in lesions limited to the lateral lobes and in the absence of any involvements of the vestibular complex. And it is to interpret these phenomena that our efforts should be directed in attempting to decipher the complex and mysterious problem of the mechanism of the cerebellar function.

THE INTERPRETATION OF THESE PHENOMENA

There have been numerous theories advanced in explanation of these phenomena. Flourens, Vulpian,[23] Renzi and Dickinson interpreted them as disturbances of coordination, attributing to the cerebellum that function which, according to Foerster's definition of coordination, enables the organism by means of its muscles to produce external effects which fulfil a definite purpose or a set task, accomplishing these effects with the smallest possible waste of energy. Bouillaud,[24] Ferrier and Thomas thought the cerebellum to be an organ for the maintenance of body equilibrium and endeavored to explain the phenomena of the lesions on that hypothesis. Babinski,[25] basing his opinion on clinical studies, proposed the theory of asynergia of movements, according to which it is essentially lost in cerebellar lesions in the harmonious association of simple movements necessary for the execution of a complicated movement and he endeavored to prove it by certain clinical tests. Babinski admitted, however, that in addition to asynergia there is also a dysmetria which is the cause of the excessive and ill-proportioned movements in cerebellar lesions. As to the asynergy, it is of course clear that it is merely a broad, general term for incoordination, and this conception of the nature of the disturbances aids us but little in understanding the mechanism of their production.

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[13] André-Thomas: Cerebellar Functions, p. 144.

[14] Muskens, L. J. J.: Jour. Physiol., 1904, xxxi, 212; Brain, 1914, xxxvi, 352.

[15] Schiff, M.: Lehrbuch der Physiologie, 1858, I, 354.

[16] Ferrier and Turner: Phil. Tr. Roy. Soc., London, 1894, clxxxv, B, p. 730.

[17] Bechterew: Arch. f. d. ges. Physiol., 1882, xxx, 318.

[18] Breuer: Arch. f. d. ges. Physiol., 1891, xlviii, 250.

[19] Weidenreich: Zeitschr. f. Morphol. u. Anthropol., 1899, i, 259.

[20] Thiele, F. D.: Jour. Physiol., London, 1905, xxxii, 355.

[23] Vulpian: Leçons sur la physiologie générale et comparée du Système Nerveux, Paris, 1866.

According to Holmes and Stewart the cerebellar phenomena are the result of defective cooperation of muscles and their antagonists. The cerebellum, according to this view, effects relaxation of the extensors while the flexors are in a state of contraction, and relaxation of the flexors while extension is in progress, the same being applied to the abductors and adductors.

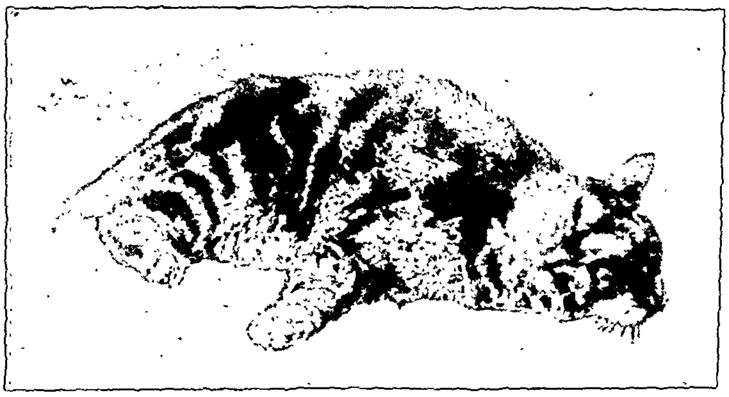

Fig. 2.—Same cat as shown in Figure 1. In standing posture for two or three minutes. Considerable abduction of both limbs on right, paretic side.

OBJECTIONS TO THE FOREGOING VIEWS

There are two points in common to all these theories: First, they all ascribe to the cerebellum a function which is totally distinct from that possessed by any other part of the nervous system, a function that is closely allied with motor activity but still different from it in a vague, indefinite way. Secondly, the function of the cerebellum, according to any of these theories, cannot be expressed in the terms of a single neuron effect. It is of course evident that coordination of movement, synergy of movement, etc., an effect which manifests itself simultaneously in a large group of muscles, widely isolated from each other and differing in their mode of action, cannot be the expression of an individual neuron. It must be the resultant effect of a large number of neurons all functioning at the same time. This conception of function is, however, entirely unnecessary for our understanding of the activity of any other nerve structure, in which case each unit, whether motor or sensory, may exhibit its individual function independently of the other neurons and produce a corresponding effect.

Notable among these was Risien Russell, who maintained that unilateral ablation of the cerebellum was in his experiments followed by genuine paralysis on the side of the lesion, entirely identical with that following ablation of the motor area of the cortex. This is, however, denied by the majority of observers. There was no paralysis in the animals operated on by Bouillaud,[24] Dalton,[26] Longet,[27] Munk and Ferrier and Turner.[16] Personally, I am convinced that pure cerebellar lesions do not give rise to paralysis. One has only to compare the gait of an animal after destruction of the motor area of the cerebrum with that which follows unilateral ablation of the cerebellum to be impressed by the marked dissimilarity between these two conditions. In the former instance, the limbs on the side opposite to the lesion are distinctly paretic; they are unable to support the animal on that side; they bend under it and are frequently placed with the dorsal surface to the ground. In the latter condition, on the other hand, the limbs on the side of the lesion are generally in full extension; they are never placed with the dorsal surface to the ground, but are usually thrown violently forward or outward, and the frequent falls are therefore to be attributed to the ill-proportioned activity of the muscles rather than to loss of their activity.

GOWERS' HYPOTHESIS

Gowers,[33] as far as I can ascertain, was the only one to maintain, on purely theoretical grounds, that the cerebellum has no downward effect whatever, that it exhibits its influence on the cerebrum exclusively, this influence being inhibitory in character, and that cerebellar coordination is nothing else than coordination of the activity of the rolandic cortex. His arguments in support of this theory were as follows: The cerebellum is connected with the periphery by means of afferent or upbearing tracts exclusively. The only efferent or outgoing tracts known to come from it pass by way of the superior cerebellar peduncle to the opposite hemisphere of the cerebrum, and it is inconceivable that an organ having no outgoing tracts to the periphery could exert a direct motor effect on it. Continuing he said:

> The will may alter any muscular contractions by which the upright posture is maintained, and yet without thus being deranged for an instance, and it is difficult to understand how this is possible if the two motor effects, the cerebral and cerebellar, take place apart, and equally difficult if we assume that they only come together in the subordinate centers in the spinal cord.

He therefore concluded that the cerebellum exhibits its function on the motor cortex of the opposite hemisphere of the cerebrum by way of its efferent tracts passing along the superior cerebellar peduncles, and that this function is inhibitory in character, in view of the fact that evidence at hand tends to show that when one set of cells exerts an influence on another set, this is in the nature of control, as witness the influence of the cortical motor cells on the spinal cells in the anterior horns. We must distinguish, said Gowers, between the continuous action of nerve cells, which by its nature needs control and restraint, and occasional action, which requires stimulation, and conceived as excitation.

According to this conception, the phenomena consequent on cerebellar lesions are only indirectly cerebellar; they are primarily cerebral effects, and, like the increased reflexes and spasticity after lesions of the upper motor nervous system, are due to removal of inhibition on the nerve cells directly concerned in their production.

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[24] Bouillaud: Arch. gén. de méd. 1827, xv, 64.

[25] Babinski, J.: Rev. neurol., Nov. 9, 1899, p. 784; Feb. 2, 1901, p. 260; April 18, p. 422; May 15, 1902, p. 470; Nov. 15, 1902, p. 1013.

[26] Dalton, J. C.: Am. Jour. Med. Sc., 1861, p. 84.

[27] Longet: Traité de physiologie, Ed. 3, iii, 466.

[33] Gowers, W. R., Lancet, London, 1890, i, 955.

It is evident from the foregoing that, according to Luciani, Hughlings Jackson and others, the disturbances of motility in cerebellar lesions are the expression of diminished or lost functional activity on the side of the lesion; according to Gowers, on the other hand, they are the result of exaltation of such activity.

It occurred to me that the problem could be taken out from the realm of pure speculation and solved by means of the galvanometer.

SOLVING THE PROBLEM GALVANOMETRICALLY

It is well known that living tissue in a state of activity exhibits four kinds of phenomena, mechanical, chemical, thermal and electric. Of all these the electric phenomena are the most faithful; they are to be observed, especially so in the case of nerve tissue, when none of the others can be elicited.[34] Among the electric phenomena is the state of negativity which excited tissue assumes with relation to the quiescent part thereof. On connecting two such parts with a galvanometer, with the circuit closed, a current is seen to pass through it, as evidenced by the deflection of the needle, from the quiescent to the active part. The former is therefore in its external or galvanometric relations positive to the latter. In completing the circuit and passing through the tissue the current of course passes in the opposite direction, from the active to the resting part. Active tissue, in other words, behaves electrically toward quiescent tissue as the zinc element of a voltaic couple behaves toward the copper element — it is with regard to the outer or galvanometric circuit, negative to the latter. While this electric phenomenon, the so-called action current, is generally studied by means of the negative variation, or the diminution of the preexisting current of injury which accompanies the excitation of the tissue, the latter, says Hermann,[35] is only a special case of a more general phenomenon, which is, that active tissue is, properly speaking, invariably negative (or "zincative," according to Waller) to resting tissue quite independently of previous preexisting currents. The action current is also entirely independent of the agency which provoked the activity in the tissue. The stimulus may be chemical, mechanical, thermal or electric; it may be direct or indirect. Gotch and Horsley[36] have thus demonstrated that the action current manifests itself in a peripheral nerve, not only on direct excitation of the nerve, but also on stimulation of the contralateral and functionally related motor area of the cerebrum.

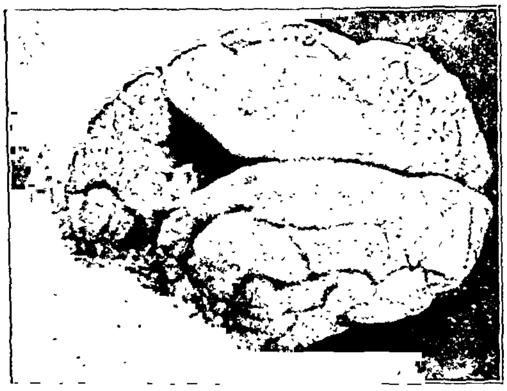
Fig. 3.—Brain of cat shown in Figures 1 and 2.

That natural nervous activity is, like that resulting from artificial stimulation, accompanied by the development of a negative state, has been demonstrated by A. Beck,[37] Alcock and Seemann,[38] Einthoven[39] and others. Beck removed the brain, spinal cord and sciatic nerves of a frog *en bloc* and placed the preparation on a glass plate. He then applied nonpolarizable electrodes to various parts of the nervous system and connected them with a galvanometer. He found that there was uniformly an electrical difference of such a nature that the proximal, more active parts of the nervous system were negative to the distal parts. Alcock and Seemann and Einthoven studied the impulses which traverse the vagus during natural respiration and found that a state of negativity invariably passes along the nerve with each inspiratory excursion. The latter also observed minor effects which accompanied the large waves of the inspiratory acts and corresponded with rhythmic contractions of the heart. A natural corollary to this should be that, if active tissue on one side of the body were connected by means of a galvanometer with the corresponding quiescent tissue on the other side, the former would be negative to the latter. That this is so for direct stimulation has been demonstrated by Hermann and Luchsinger, Waller and others in their study of skin currents. On connecting the pads of the hind paws of a cat with the galvanometer and stimulating the sciatic nerve for one of these, the corresponding pad has been found to be negative to the other. In this case the current in its internal circuit has to traverse, of course, from one side of the body to the other. That this holds true for indirect stimulation of tissue I have proved to my satisfaction by the following experiment:

With the cat under ether anesthesia, by means of a tracheal cannula I carefully exposed and isolated both sciatics. After drying all hemorrhage, I freed the nerves from contact with any of the surrounding tissue — which of course had been injured during the operation — and placed them on the boots of nonpolarizable boot electrodes, which had been soaked in Ringer's solution for the preceding twenty-four hours. I connected these with a galvanometer with a contact key in the circuit. The galvanometer employed during this and the other experiments to be described was of the Thomson type and manufactured by Elliot Brothers, London. It had a resistance of 20.74 ohms and its sensitiveness was such that at 37.5 cm. of scale distance 1 cm. deflection, registered 0.0000154 ampere of current, so that its constant (K) was 0.00155 ampere $\left(K = \frac{2I \times D}{d}\right)$.

While an experiment was in progress the nerves were kept moist with cotton sponges soaked in normal salt solution at a temperature of 38 C., which were removed during each observation so as to prevent any possible short-circuiting. The sponges were always applied to both nerves at the same time in order to avoid any possible differences of surface temperature.

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[34] Waller, A. D.: Eight Lectures on the Signs of Life, New York, 1903, E. P. Dutton & Co., p. 10; On Skin Currents. Observations on Cats, Proc. Roy. Soc., 1901, lxix, 171

[35] Hermann, L.: Handbuch der Physiologie, ii, part 1, p. 194; Borrutau, D.: Arch. f. d. ges. Physiol., 1901, lxxxiv, 95.

[36] Gotch, F., and Horsley, V.: On the Mammalian Nervous System, Its Functions and Their Localization Determined by an Electrical Method, Phil. Tr. Roy Soc. London, 1891, clxxxii, B, p. 332.

[37] Beck, A.: Centralbl. f. Physiol., Nov. 8, 1890.

[38] Alcock, N. D., and Seemann, J.: Arch. f. d. ges. Physiol. (Pflüger's), 1905, cviii.

[39] Einthoven, W.: Ueber Vagusströme, Arch. f. d. ges. Physiol. (Pflüger's), 1908, cxxiv, 246.

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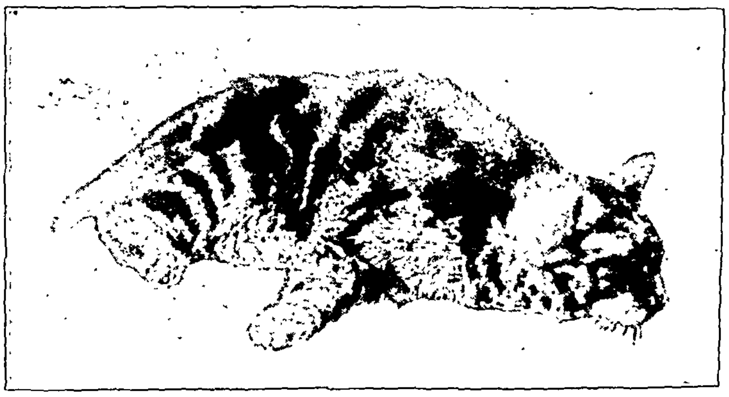

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[27] Longet: Traité de physiologie. Ed. 3, iii, 466.

[33] Gowers, W. R., Lancet, London, 1890, i, 955.

It may be assumed, however, that the hyperactivity originates in the paracerebellar nuclei, especially Deiters' nucleus. These nuclei, like the vagal cells in the medulla are known to possess automatic activity, as proved by the decerebrate rigidity following transection of the mesencephalon. Thiele[20] in an extensive study of this rigidity has shown that it originates in these nuclei and that the cerebellum exerts an inhibitory effect on them. Stimulation of the cerebellum produces immediate relaxation of such rigidity, as demonstrated by Sherrington[40] as well as Lowenthal and Horsley.[41]

It may also be assumed that the hyperactivity has its origin in the midbrain or the basal ganglia and that the inhibitory effect of the cerebellum is exerted on these structures. While later investigations tend to deny these structures a motor function, there is evidence that they participate in the production of movement to some extent.

And, finally, it may be supposed, as Gowers theoretically assumed, that there is hyperactivity on the side of the cerebellar lesion which originates in the contralateral motor area of the cerebellum.

To determine this point, I carried out the following experiments: In one cat I removed a very large portion of the right hemisphere of the cerebrum but left the motor area intact. In three others I removed only the motor area. The first cat showed no paralysis on the *opposite side*; the three others showed it to a very marked degree. Ten to fifteen days after the cerebral operation I removed in these cats the lateral lobe of the cerebellum, contralaterally to the previous lesions (of the three last, two had the right motor area of the cerebrum and the left lateral lobe of the cerebellum removed, and one the left motor area of the cerebrum and the right lateral lobe of the cerebellum) and kept them under observation for fifteen days more. The first cat showed ataxia on the side of the cerebellar lesion, but, as before, no paralysis. The three last, on the other hand, were markedly paralyzed on that side. They showed no ataxia, but did show considerable tremor, involving head, trunk and paretic limbs. The presence of the tremor in these cases, after destruction of motor area, would indicate that this symptom is not entirely cerebral in origin, a supposition advanced, on theoretical grounds, by Gordon Holmes[42] and Kinnier Wilson.[43]

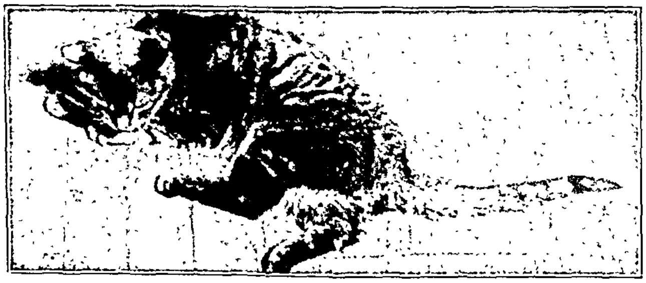

Fig. 5.—Cat shown in Figure 4, after remaining in that posture for two to three minutes. Animal falls over to the right, owing to hyperactivity of the muscles supporting the body on that side (see text).

Galvanometrically these cats gave the following results: The first one, with the motor area intact, although with a large portion of the cerebrum removed, showed a persistent and invariable negativity on the side of the cerebellar lesion, identically the same as in those animals in which a cerebellar lesion only had been produced. The three others, on the other hand, with a lateral lobe of the cerebellum removed and the additional extirpation of the contralateral motor area of the cerebrum, gave no galvanometric deflection whatever. I kept up my observations in these animals for nearly three hours and not once was there a deviation from this rule. Fearing that there was no deflection obtained in the last animals because of a possible fault in the circuit, I cut the sciatic nerve and applied the nonpolarizable electrodes to it in such a manner that one was in contact with the longitudinal surface and the other with the cross section. A current of injury was promptly obtained, showing that there was no such fault there.

The results obtained thus tend to show that the hyperactivity on the side of the cerebellar lesion, as *shown by its being electrically negative ("zincative")* to the other side, originates in the contralateral motor area of the cerebrum; that following unilateral ablation of the cerebellum the contralateral motor area of the cerebrum becomes hyperexcitable, has been found by *Risien Russell*[9] *and confirmed in part by* Luciani.[4] Their results were denied by Bianchi.[44] Cerebellar incoordination is, therefore, in accord with Gowers' hypothesis, only indirectly cerebellar; it is primarily a cerebral effect, an expression of its hyperactivity consequent to the removal of inhibition or control by the opposite half of the cerebellum. The hyperactivity manifests itself in all the movements in that they are excessive, forcible, unchecked and go beyond the mark. In walking the animal throws its foot violently forward; in seizing food its paw goes beyond it, etc. Clinically, as Babinski pointed out, cerebellar patients, in performing the finger-to-nose test, are unable to stop the movement when the point aimed at is reached, and the finger goes beyond it, violently striking the jaw. Similarly, when tracing on a sheet of paper a line which should be stopped at a certain point, the pen goes way beyond this limit. The symptom of adiadokocinesis is therefore best explained by assuming it to be a result of the dysmetria and excess of each component movement, such as pronation and supination, a view suggested by Thomas, rather than that it is due to a delay in the excitomotor activity, as thought by Babinski, the discoverer of this phenomenon.

This conception of the cerebellar function is also in accord with certain well-established anatomic and clinical facts. The cerebellum develops embryologically from the rhomboidal lip of His, along the sensory tracts, as an accessory to them. Anatomically it is too, as Edinger, Sherrington, Gowers and others pointed out, a sensory organ. The effects of its lesions are, however, motor in character. This contradiction between its anatomy and physiology does not exist if we assume the motor phenomena to be cerebral in origin, and the function of the cerebellum to be that of control and restraint, such, to use a crude simile, as that of the vagus, which is also a sensory structure.[45]

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40. Sherrington, C. S.: Proc. Roy. Soc. London, 1896, lx, 382; Integrative Action of the Nervous System, N. Y., 1906.

41. Lowenthal and Horsley: Proc. Roy. Soc. London, 1897, lxi, 20.

42. Holmes, Gordon: Brain, 1904-1905, xxvii, 364.

43. Wilson, S. A. Kinnier: The Anatomy and Physiology of the Corpus Striatum, Brain, 1914, xxxvi, 478; Progressive Lenticular Degeneration, Brain, 1911, xxxiv, 465.

44. Bianchi, quoted by Sherrington: Schäfer's Text-Book, ii, 904.

45. It was held by Waller, Schiff and others that the inhibitory fibers of the vagus originate in the nucleus of the spinal accessory. This seems to be disproved, however, by later investigations. (Luciani: Human Physiology, i, Chapter 9.)

Another mystery cleared up by this conception of the cerebellar function is the path by which the cerebellar effects exhibit themselves on the periphery. As is well known, in view of the fact that the cerebellum has no descending tracts to the spinal cord, and also that the effects of its lesions manifest themselves homolaterally and not contralaterally, as is the case in lesions in all other motor and sensory tracts, it was found necessary to conceive an unusual and circuitous course for the transmission of its impulses. It is assumed that, originating in the deep nuclei of the cerebellum, the impulses first ascend by way of the cerebellomesencephalic tracts to the red nucleus of the opposite side and there are relayed, and finally descend by way of Monakow's bundle, or rubrospinal tract, crossing again to reach the spinal on the side whence they first started. This course, besides being different from that of all other motor and sensory structures which, as a rule, cross to the opposite side to exhibit their effect there, and, if homolateral in function, as the direct pyramidal tract or the vestibulospinal tract, go by direct route to the same side, is also untenable in the light of certain anatomic facts. The cerebellum attains its largest development in man, whereas the rubrospinal tract, by which its impulses are supposed to be carried, has been demonstrated only in animals and is in man at best only rudimentary.

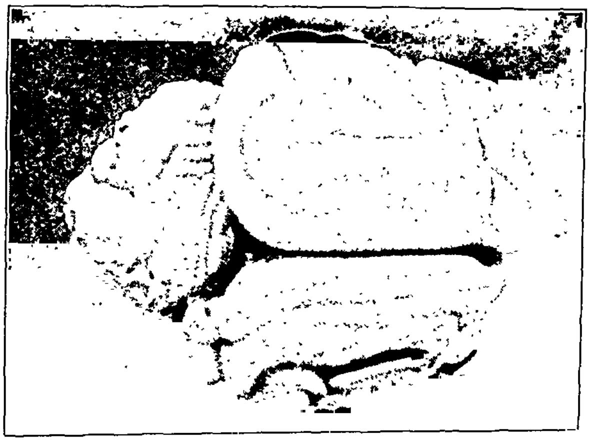
Fig. 6.—Brain of cat shown in Figures 4 and 5.

According to our conception, however, each half of the cerebellum exhibits its function on the opposite hemisphere of the cerebrum, its tracts crossing to the other side like those of all other sensory tracts. Its indirect effects, in the form of regulated and well-proportioned movements, manifest themselves on its own side, as, originating in the motor cortex of that hemisphere of the cerebrum, the motor impulses, passing by way of the pyramidal tracts cross to the opposite side before reaching the "final common path" in the spinal cord.

Finally, there is a good deal of evidence that there is a structural linkage between the cerebral hemisphere of one side and the cerebellar of the other side, and that the cerebellum is subservient to the cerebrum. It has been observed clinically in cases of congenital or acquired atrophy of the cerebrum, and experimentally after destruction of the motor cortex, especially if the optic thalamus was involved in the lesion, that there was simultaneously in the congenital lesions or after some time in the acquired variety, an atrophy or degeneration of the opposite lateral lobe of the cerebellum. These cases are described under the name of crossed hemiatrophy.

With reference to the tremor it appears to be largely dependent on an interaction between the cerebellum and the midbrain structures. I am engaged in some experiments with reference to these points at present and hope to communicate the results at some time in the future.

To sum up, the cerebellum is a complex structure having no direct effect on the periphery, but acting primarily on the motor cortex, the paracerebellar nuclei, and probably also the basal ganglia and ruber. Its primary effects are those of inhibiting, controlling and regulating the activity of these latter structures. Its ultimate effects are appropriate and rhythmic muscular action.

5 South Wabash Avenue.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GREY, WEISENBERG AND WORK, AND MEYERS

Dr. W. F. Schaller, San Francisco: Dr. Work brought out the relationship between certain symptoms and definite localization of lesions. Certainly this is progress in the right direction. It is not a question only of posterior fossa disease characterized by a syndrome, it is a question of exact anatomic localization. The only way we shall make an advance in this work is by correlating the symptomatology and pathology; by studying our specimens in macroscopic and microscopic serial sections.

Dr. Meyers does not believe that nystagmus is primarily an expression of disturbed cerebellar function. I am inclined to favor this view, and regard vestibular nystagmus as a reflex and as the motor expression of a stimulus somewhere along the vestibulo-ocular path: labyrinth, vestibular nerve, Deiters' nucleus, posterior longitudinal bundle and oculomotor nuclei. This stimulus may be due to a focal lesion, or to pressure. Dr. Grey in his conclusions stated that in posterior fossa tumor without nystagmus he was inclined to believe that the tumor was intracerebellar; and that in cases of extracerebellar tumor he generally found nystagmus. May I ask Dr. Grey if the reason for this was not that in cases of extracerebellar tumor the intracranial pressure was increased and the nystagmus was due to disturbance of function by pressure? If there be a nystagmus following cerebellar lesions proper, I believe it is due to involvement of the vermis in relation to its efferent fibers to Deiters', i. e., cerebellovestibular tract (*Hacken Bundel, faisceau en crochet*) which forms an arm of the nystagmus reflex in that stimuli are received in this way from the muscles and joints and pass to the vermis before acting on Deiters' nucleus. To illustrate these views I wish briefly to mention three posterior fossa cases recently studied clinically and anatomically. In the first case there was no nystagmus, no intracranial pressure. The lesion was a vascular one, limited to the white matter of both cerebellar hemispheres and involving the dentate nucleus on one side. There was marked ataxia of the cerebellar type. The vestibulo-ocular reflex path was not involved; hence absence of nystagmus. The second case was that of a right sided cerebellopontine angle tumor in which the usual signs of intracranial pressure, vertigo, nausea, headache and choked disks were absent. The tumor had caused a considerable atrophy of the cerebellar hemisphere on the same side and also the pons, and by replacing these structures had not materially added to the contents of the posterior fossa; hence absence of intracranial pressure. Ataxia of cerebellar type was marked. A slight nystagmus more marked to the right was explained by direct involvement of the vestibulo-ocular reflex. The third case was a tumor in the fourth ventricle arising from the inferior tela. The marked nystagmus could be explained by direct pressure of the growth on Deiters' nucleus. Ataxia was absent.

Dr. A. L. Skoog, Kansas City: The subject of cerebellar tumor is always interesting, and might be broadened to include any of the lesions in the cerebellum. The subject of cerebellar function has received a great deal of attention in the last few years and many new facts have been presented. However, as indicated by Dr. Work, many of the statements are really theoretical, which perhaps makes the subject still more interesting. As stated by several of the speakers, it invites the possibility of error in diagnosis. It has been stated that glioma is the most frequent type of tumor found in the cerebellum. This is in accordance with my own view. The glioma is a type of tumor which always springs from glia tissue, but there are those gliomas which are more dense than others, those that have a tendency to be better outlined. The type, however, is the infiltrating one and at times they are rather difficult to differentiate from some simple degenerating conditions of the central nervous tissue. I have always been interested to know whether there is any difference in symptomatology, even though the tumor be located in the same place, between the soft and infiltrating and the more dense one. That might be a reason for the difference in symptomatology which was brought out in the discussion.

Dr. G. W. Robinson, Kansas City: Dr. Work speaks of the diagnosis of tumors in the posterior cranial fossa. I should like to ask Dr. Work to speak on the differentiation between these and those situated more anteriorly and giving cerebellar symptoms. I recall two or three patients with lesions (tumor or trauma) of the frontal lobe, chiefly of the middle frontal convolutions, the apraxic center, giving a contralateral cerebellar syndrome. Another condition I have observed recently has been a patient with chronic progressive cerebellar tremor, without ataxia or nystagmus. I should like some of the men who read these excellent papers to tell us, if possible, the location of the lesion giving this particular symptom. I have recently observed two patients who had shown no nystagmus. At necropsy one had a degeneration of the right cerebellar hemisphere resulting from an encephalitis (associated with typhoid fever). The other had a large cyst involving the right cerebellar hemisphere.

Dr. John S. Turner, Dallas, Texas: These cases of cerebellar disturbance are very interesting to all of us and I rise to report a case and to present a question and to ask some of the gentlemen in closing to touch on it. It is in reference to a case recently occurring in our part of the country which became almost a medicolegal case, but by having the records properly presented a damage suit was prevented. The case came under my observation with all the typical symptoms of cerebellar tumor—nystagmus and other eye symptoms. The patient was a girl of 18, being able to go about, but not seeing very well, and having headaches, vomiting, titubation, disturbed coordination and considerable emaciation running over a long period of time. After observing the symptoms and making a tentative diagnosis, I sent her to a physician to look over the eye conditions. He confirmed my diagnosis in so far as the eyes were concerned, using some atropin to further dilate the pupil. Immediately after the dilatation the patient became blind and has never seen since that moment. Her headaches ceased, she gained in weight and was physically much better, but was totally blind. A damage suit was threatened against the physician for making the patient blind, but the records showing that she was partially so, and the opinion that she would ultimately become blind anyway prevented the suit.

Dr. Cecil E. Reynolds, Los Angeles: Dr. Work laid stress on the paralysis of the sixth nerve in cerebellar lesions, and I think it is very important. I remember a case of Dr. Charles A. Ballance of London at the Great Ormond Street Hospital in 1905, in which there was weakness of the sixth nerve on the left side and a bulging of the occipital fossa on the right side. The optic neuritis was more advanced on the left side. Mr. Ballance operated on the side which bulged, but the tumor was eventually discovered on the same side as the sixth nerve paresis. In my experience the signs of intracranial pressure have been more intense in cerebellar lesions and more early than in cerebral lesions, and this fact in a measure militates against the value of sixth nerve paralysis as a localizing sign in cerebellar disease, because in general increase of intracranial pressure the sixth nerve is often first affected by reason of that general pressure.

I would like to ask some of the gentlemen who have spoken as to their experience of the value of skew-deviation as a localizing sign. Dr. Robinson mentioned a confusion of frontal lobe lesions with cerebellar lesions. I have seen several cases in which a frontal lobe lesion was mistaken for a cerebellar lesion, and it appears to me that in cerebellar lesions the head is more twisted, with the chin pointing to the shoulder of the affected side, whereas in frontal lobe lesions the eyes deviate to one side or the other without much tilting of the head. Also I have noticed that in addition to hebetude out of proportion to the pressure, there is usually a slow and deliberate Babinski's sign in frontal lobe lesions, more sluggish than that usually seen in lesions of the pyramidal tract.

Dr. George A. Moleen, Denver: Just one remark on what Dr. Work said with reference to the extension of tumors from the thalamus downward. Is it not the rule to find unilateral paralysis of the third nerve prior to the involvement of conjugate deviation, the center of which lies pretty close to the sixth center in the pons? From this we presume there is a communicating fiber to the third, and in these extending tumors it would seem fair to expect a unilateral lesion of the third before the affection or disturbance of conjugate deviation would occur.

Dr. Philip Work, Pueblo, Colo.: We found in working up our pathologic material on this subject that cases which we thought definitely cases or tumor of one or other peduncle proved to be cases in which the involvement had gone past the peduncle, and the diagnosis and localization of symptoms has been hindered by the fact that these cases are so far advanced before they come to section. I personally believe that the matter of function of the peduncles—and coincident with it the establishment of a definite symptomatology—can only be hoped for when we have seen a sufficient number of early cases come to section. This is predicated on a series of necropsies from coincident cases in which the brain lesion was discovered incidentally in routine examination. The differential diagnosis of cerebellar and frontal tumor has been mentioned by one gentleman, but is too big a subject, I feel, to take up here. I have in mind several cases in our own series in which that identical question came up. In two cases in which the clinical diagnosis was made of cerebellar trouble, section showed frontal trouble, with definite cerebellar symptoms. These cases are being worked up at the present time, and we hope to be able to report something of value when we get them correlated. The loss of sight spoken of in the medicolegal case would seem to me to be due to the advanced state of the optic condition. The fact that the other symptoms abated more or less I do not attempt to reconcile.

Dr. Ernest Grey, Boston: Dr. Schaller has referred to increased intracranial pressure as an important factor in the production of nystagmus. This is the view of Bárány and others, and in our earlier work we inclined to the same belief. Recent observations, however, have led us to seek another explanation. We found nystagmus present in a group of patients with subtentorial new growths, some of whom had greatly increased intracranial pressure, while others had practically normal pressure. We have had a similar series of patients with the same variations in the degree of intracranial tension; none showed any nystagmus.

Dr. I. Leon Meyers, Chicago: Something has been mentioned in regard to nystagmus. I can simply add what I said in my paper—in my experience true cerebellar *lesions* do not give rise to nystagmus unless there is additional involvement of the vestibular complex. Skew-deviation has been observed in a few experiments on dogs during the time of anesthesia, but was lost after the animal awakened. Frederick Batten in a paper published *in Brain* in 1903 determined that the position of the head is not diagnostic of cerebellar lesions. It appears that the position of the head is due to the loss of knowledge of special relationship and is vestibular in origin. In my judgment the cerebellum is purely an organ which exerts an influence on other nerve cells in the brain structures—not on the periphery; the control it exerts is chiefly in the motor sphere.

OPERATIVE TREATMENT OF BUNIONS BY THE MAYO METHOD*

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ROCHESTER, MINN.

DEFINITION

The bunion is a painful bursitis superimposed on a hallux valgus. The degree of hallux valgus is by no means a criterion of the severity of the bunion (Fig. 1). The Mayo operation for bunion is for the relief of the painful bursitis and not a cosmetic operation for doing away with the deformity of the hallux valgus, though incidentally the deformity is reduced. For many years the operation[1] about to be described has been used in the Mayo Clinic and has given such satisfactory results that I think it wise to further emphasize its usefulness.

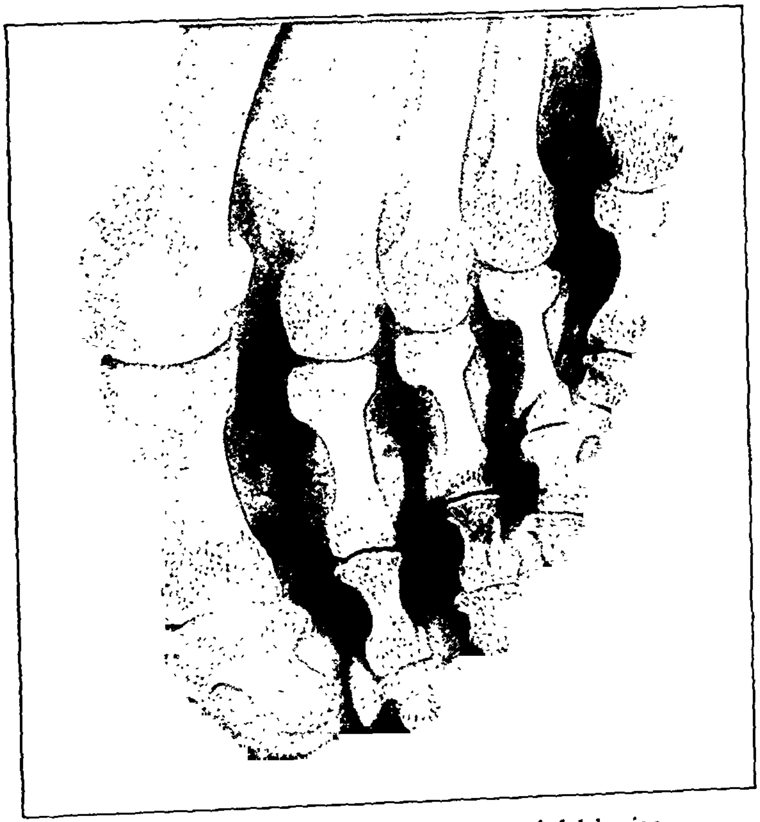

Fig. 1.—Moderate hallux valgus with painful bunion.

ANATOMY

Briefly we may consider the anatomic findings in this deformity. It is not seen in children who have never worn stiff shoes nor is it noted in individuals who have always gone barefoot. In these normal feet the great toe is in line with or turns slightly inward from the inner border of the foot. It has been stated that in the bunion foot the great toe is the longest, whereas the second toe should be of the same length or even a little longer. While this is not invariably true, still in this type of foot, that is, with the great toe the longest, the deformity is often present. In hallux valgus a line drawn through the anteroposterior axis of the great toe courses anteriorly outward at an angle of 30 degrees or more. The condition has generally been caused by wearing too short a shoe and this information is many times voluntarily given by the patient. The tendon of the extensor proprius hallucis becomes displaced outward and further increases the deformity. The pressure and irritation of the shoe causes more or less of a chafing action on the skin over the prominent inner aspect of the head of the first metatarsal bone. This irritation in many cases causes a distinct hypertrophy of the end of the bone and small bony exostoses occasionally form. Nature comes to the rescue with the formation of a bursa and we then have a bunion. It is only when this bursa becomes inflamed, mechanically or by infections, that tenderness results and surgery is indicated. Many cases go on to sepsis. When this occurs, operation should not be undertaken until the infection has completely subsided. Complete rest and alcohol dressings usually promptly clear up the infection. On top of the bursa may come a corn, adding further to the distress and inconvenience of the patient. Thus it may be stated that the symptoms depend not on the deformity but on the inflammatory changes in the bursal sac causing oftentimes continual discomfort and pain. The proximal phalanx of the first toe articulates often only against part of the head of the first metatarsal, the inner portion of the head impinging against the skin of the inner side of the foot. Often in patients in middle life or beyond, rarely in the young, there is an associated arthritis with deposits. These patients do not obtain the great relief accorded the nonarthritic cases. They should not on this account be denied the benefits of the operation, since formation of the new joint is a great relief.

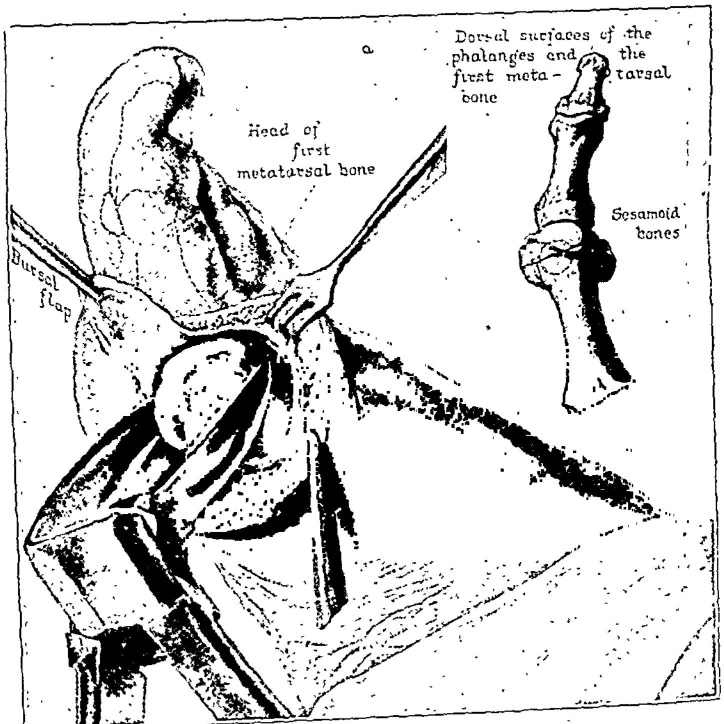
a
Dorsal surfaces of the phalanges and the first metatarsal bone
Head of first metatarsal bone
Bursal flap
Sesamoid bones

Fig. 2.—*a*, Removal of head of first metatarsal bone. Bursal flap dissected free; *b*, angle at which head of metatarsal is removed, showing short incision at right angles to long incision. The short incision removes the hypertrophy of the bone.

All cases of hallux valgus do not cause inconvenience and many cases of moderate bunion had better not be interfered with surgically. Too often the cases are passed over lightly by the surgeon when the complaint is really a serious and disabling one to the patient and demands surgical interference. Bunion has long been looked on as a trifling condition, but to the individual with the pain it is anything but trifling.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Mayo, C. H.: The Surgical Treatment of Bunion, Ann. Surg., 1908, xlviii, 300.

OPERATIONS

Heuter[2] advised excision of the head of the first metatarsal bone for the relief of the condition. Hamilton[3] later reported eleven cases and his name is often mentioned in connection with the operation. Schede[4] advised excision of the bursa and removal of part of the head of the first metatarsal not in contact with the phalanx. Barker and Reverdin advised removal of the exostoses and of a wedge of the metatarsal just above the head. Various other operations have been suggested, such as removal of part of the proximal phalanx and part of the head of the metatarsal. It has been suggested that the head of the metatarsal bone be removed by an incision between the great and second toes, thus doing away with an incision on the inner side of the foot. The objection to an incision on the inner part of the foot we have found to be theoretic rather than real. By making a curved elliptical incision with the curve upward, it can be so arranged that the pressure of the shoe comes below and not on the line of incision. The operation has been performed in our clinic in 148 cases, nearly all of them double, with, on the whole, most gratifying results.

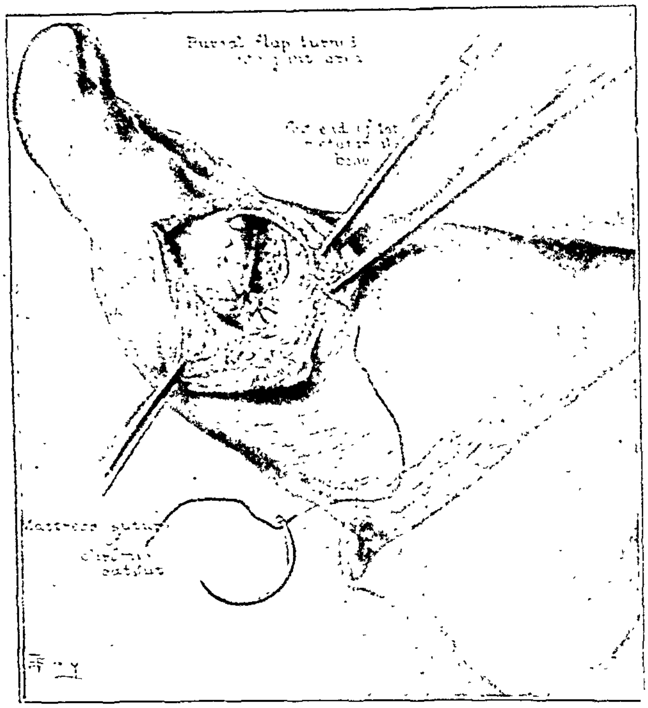

Fig. 3.—Head of bone removed. Bursal flap tucked in and approximated to periosteum of first metatarsal by two mattress sutures of chromic catgut.

Many patients have the condition associated with hammer toe, callosities on the bottom of the feet, etc., and unless it is carefully explained beforehand to the patients what they may expect from the operation, they may be disappointed that they are not relieved of all their foot trouble. However, in cases carefully selected, the results have been most excellent. Great care must be exercised in patients with flat feet to see that too much of the head is not excised. At the same time, enough must be excised to relieve the condition.

TECHNIC

The actual technic of the operation may be briefly stated: A semilunar incision with the curve upward is made at the metatarsal phalangeal joint of the great toe. The skin is dissected back, being careful not to puncture it. A flap including the bursa is then taken with its base attached to the proximal phalanx, having its convexity extending on to the head of the first metatarsal (Fig. 2a). The fat is then pushed back from around the head of the bone and a large bone-biter is introduced from without inward, aiming to take off most of the articulating surface of the head of the metatarsal bone, leaving sufficient of the enlarged end to serve as a weight-bearing portion (Fig. 3). This bone-biter is introduced at an angle of about 75 degrees so that the outer side of the metatarsal bone is a little longer than the inner side after the piece is removed (Fig. 4). With a rongeur bone-biter the prominence left on the inner side is smoothed down (Fig. 2b). The flap is then tucked in and the base of the flap sewed to the periosteum of the first metatarsal by two mattress sutures of chromic catgut (Fig. 3). This serves to straighten the toe and put it in its proper line. The skin is then closed with one or two sutures of silkworm gut and closer approximation is secured by interrupted horsehair sutures. A pad of gauze is inserted between the great and second toes to straighten the great toe (Fig. 5). A dressing soaked with alcohol is applied and carefully bandaged.

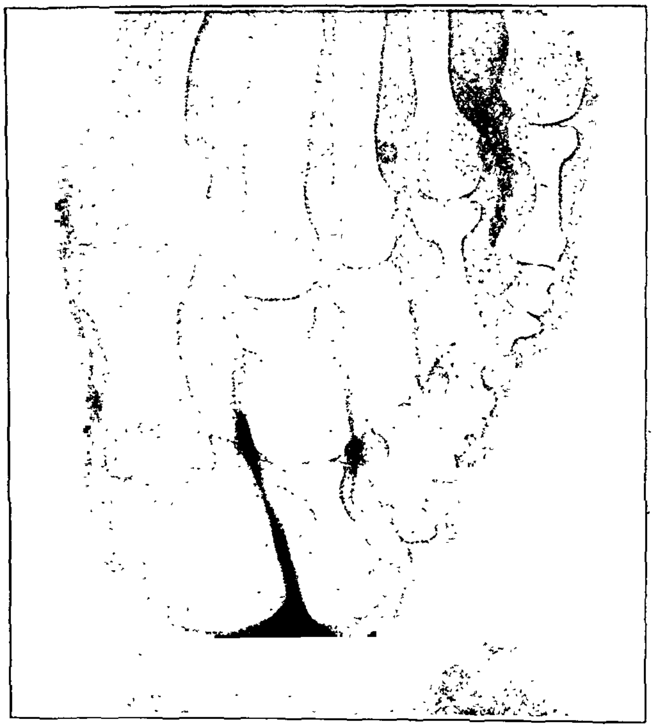

Fig. 4.—Greater part of metatarsal head removed, leaving sufficient of the expansion for weight-bearing.

AFTER-CARE

No splints are necessary. Pressure of the bed clothes is removed by the use of half barrel-hoops. Twice daily the bandage is opened enough at the end of the great toe to allow pouring in of alcohol, thus soaking the dressing and adding greatly to the comfort of the patient. Stitches are removed in a week, weight-bearing permitted in ten days and the patient encouraged to use the feet as soon as possible. A small pad

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2. Heuter: Quoted by Holmes, T., in System of Surgery, Philadelphia, Henry C. Lea's Son & Co., 1882, iii, 372.

3. Hamilton: Quoted by Holmes, T., in System of Surgery, Philadelphia, Henry C. Lea's Son & Co., 1882, iii, 372.

4. Schede: Quoted by von Bergmann, von Bruns, and von Mikulicz in A System of Practical Surgery, Philadelphia, Lea & Febiger, 1904, iii, 854.

of gauze or cotton is to be worn between the first and second toes for a few weeks. The wearing of shoes with a proper straight inner side is insisted on. All patients will not follow this advice, but by carefully explaining why it is to be desired, the responsibility is then placed on them.

ABSTRACT OF DISCUSSION

Dr. E. W. Ryerson, Chicago: It is a rather difficult thing for me tactfully to say what I think about the Mayo operation, because I do not think it should often be done, unless it is impossible to bring the end of the first metatarsal bone and the phalanges of the toe into a straight line without undue force. It is undoubtedly true that a great many people have the wrong view of the Mayo operation. I have myself operated under the idea that it consisted in removing the entire head of the first metatarsal bone. That should never be done. It disturbs the balance of the foot so markedly, that people who have had the entire end of the first metatarsal removed are always more or less incapacitated. I have seen some thirty patients, about twenty of whom were operated on by me, and the others were operated on by other men, all of whom have had trouble after the Mayo operation. It is true that the bunion undoubtedly was cured, but they had a painful static disturbance of the foot and a severe type of flatfoot in all of these cases. Now what should be done? In many cases there is no bursa whatever, and in many other cases the bursa is small. There can be a much irritated skin without a bursa, and with the presence of a rather large—not always enlarged—metatarsal head, the divergence of the big toe outward, of course, allows the pressure of the shoe to come against the end of the metatarsal. The thing to do—and I have done it frequently with satisfaction—is to make exactly the same kind of an incision that Dr. Henderson and Dr. Mayo use; to push the toe down where it will be out of the way; to take a sharp chisel and start it at the front of the inner side of the metatarsal bone which is just where the edge of the phalanx comes, and cut backward, chiseling off the projecting portion of the bone. We can remove a piece an inch long, or even more, if necessary, down along the shaft of the bone, the portion of which is making the trouble, and it is extremely important to shave down the shaft of the bone just as carefully as one possibly can, so as to leave no little spicules of bone sticking out and no little shreds of periosteum, and make the whole of the bone smooth and practically cylindrical. Do not disturb the rest of the articular surfaces unless you have to. We all know that in extreme cases the big toe is pushed way out of line, and it cannot be brought anywhere near straight without removing some of the articular surface, and in such cases Dr. Mayo's operation is excellent and has proved its use, as emphasized by the speaker; but the inner side of the bone should be trimmed off very carefully. That is the main thing. It is the inner side of the bone that makes the trouble. It is also wise in many cases to excise the thickened skin as well, but this is not always necessary. One must always suture the skin very accurately and it is well to twist bleeding vessels instead of ligating them. It is my personal opinion that you should avoid the Mayo operation in every case you possibly can.

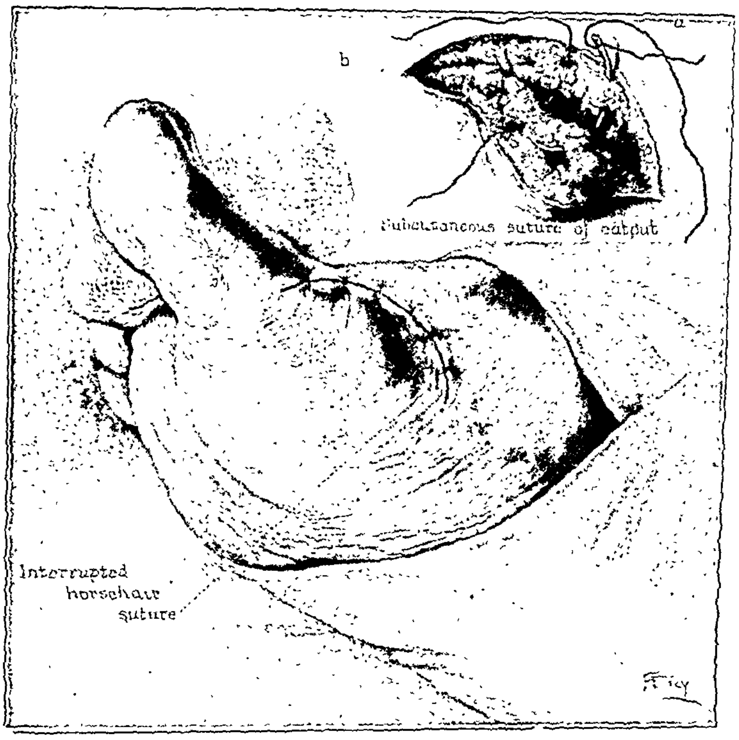

Fig. 5.—*a*, subcutaneous tissue sutured with interrupted catgut sutures; *b*, location of scar where shoe will not press on it. A pad of gauze is placed between the first and second toes to maintain the correct position of the great toe.

Dr. John Ridlon, Chicago: To emphasize the difference of opinion among men working side by side in the same town, I wish to say that I agree with Dr. Ryerson only in one statement; that is, that the Mayo operation should always be avoided. Further than that, I would want to say that I think the Mayo operation a much better operation than the one described to you by Dr. Ryerson. I believe that the success of an operation on a big toe with a bunion or hallux valgus, in order to secure a useful, strong, mobile and painless joint, lies in the taking away of a lot of bone. I remove all of the head, and then some, and all of the knobs, and I am particularly careful to remove any knobs on the plantar surface of the foot.

Dr. J. P. Lord, Omaha: I have performed the Mayo operation since it was first described by Dr. Charles Mayo, and I have undertaken to follow the technic as originally outlined by him, and that technic does not recommend the removal of the whole of the head of the bone—but about three fifths, as I remember it, of the articular enlargement—then the thorough removal of the projecting bone on the inner side, and the following of all of the details. It has never brought me anything but the most complete satisfaction. I think that if too much bone is not removed, the objection raised by Dr. Ryerson, that it is conducive to flatfoot, is not borne out, at least by my experience, and I simply wish to put myself on the side favoring the Mayo operation as being the best procedure for the condition described.

Dr. Leonard W. Ely, San Francisco: There is one point in Dr. Henderson's paper to which I should like to take exception, namely, the causation of a bunion. The simplest things, when we come to examine them, we find are not simple at all. I always assumed that a bunion was caused by short shoes, but people who wear short shoes are not always those who have bunions, and many people who have worn broad shoes and long shoes all their lives have bunions. Young of Philadelphia discovered one cause in a bone which pried the first and second metatarsals apart. Some German observer maintains that a bunion is really not a hallux valgus but a hallux varus, caused by a varus position of the metatarsal bone. He ascribes the ultimate cause of it to an obliquity of the articulation of the metatarsal with the tarsus. That looked extremely probable, and I assembled a great many roentgenograms with the idea of finding out if it was so. It is not, as far as I can make out. It seems to me that our knowledge of this subject will be quickened if we will not assume a cause, but will try to find out the real cause of the deformity, and possibly improve our treatment on that basis. The insertion of a bursa I have never found necessary. I agree with Dr. Ryerson that if one takes off as much bone as is necessary at the end of the metatarsal, one will get a fairly movable joint.

Dr. J. T. Rugh, Philadelphia: I just want to call attention to one little point which I usually have followed in this operation, though the conditions that are present in the individual case should determine the type of the operation. It does not appeal to me to be the best surgery to make the base of the flap anteriorly. The vitality of the flap, I feel, would be endangered. I always make my flap with the base of it posteriorly along the side of the metatarsal to guard against sloughing.

Dr. B. M. J. Conlin, Long Beach, Calif.: Bunions are not caused by either short or tight shoes. After a careful study of bunions for over forty years I have come to the conclusion that they are hereditary. The natives of the Sandwich Islands and the Indians of Mexico, who never wear shoes, have bunions; and the people wearing short, tight, ill-fitting shoes do not have bunions, unless they inherit them. The bunion in the human species is analogous to the ringbone in the horse, and the breeders of thoroughbred horses have demonstrated beyond a doubt that ringbone is transmitted from parent to offspring.

Dr. E. A. Rich, Tacoma, Wash.: In general considerations with regard to feet afflicted with bunions, two facts seem to stand out most prominently; first, a varying degree of flatfoot is constantly present, and second, this flatfoot usually is not of the painful variety. I have in mind cases that present with so marked a degree of flatfoot that the bunion deformity would seem insignificant, yet the bunion is the only part of the foot that causes pain. This fact further illustrates some points recently brought out in the controversy in the columns of The Journal over flat feet, namely, that the degree of flatfoot cannot be gaged by the symptoms. It is my conviction that the flatfoot condition in operative bunion cases does not need treatment and end results will be better if no attempt is made to correct the arch deformity.

We have been doing our own operation on bunions, which is a little more extensive than that of the Mayos. We have taken out more bone. Often the head of the metatarsal has to come out, but usually part of the articulating surface of the joint can be saved. Instead of using the bone clippers we prefer a sharp chisel that will directly cleave the bone and not crush it. We believe that there is less cause for regret when too much bone is removed than when too little is taken away.

Dr. John F. Golden, Chicago: Most of the bunions that have come to me for the last eight years have been operated on according to the method of Dr. Henderson. It occurred to me during the discussion that probably the bunions came earlier to the man in orthopedics and later to the man in general surgery. The bunions that we get are large ones, and usually the foot is markedly flat. In those cases I have acted according to Dr. Henderson's procedure, waiting as long as possible and removing as little as possible, and the results have been very good. I might ask Dr. Henderson in closing this discussion to mention the formation of hematomas, which frequently ensues. We aspirate them about the third day, and we do not touch them with our fingers or with the sutures. Everything is handled with metal; not even touched with gloves. We use ligatures practically not at all, and if hematoma results we simply aspirate that hematoma at the end of the second or third day. I saw Dr. Smith do an operation on a number of stiff fingers, and I noted the analogy between the technic he used and that which is followed by Dr. Henderson in the case of flat feet.

Dr. M. S. Henderson, Rochester, Minn.: I can say that I am just as positive that this method is the best as Dr. Ryerson is that it is not, because I believe the whole thing to hinge on the fact, which I probably did not emphasize in the paper, that the bunion foot is a particular type of foot. The great toe is usually the longest, and it should not be the longest, or at least should not be any longer than the second toe. Now that is not an invariable rule, but in a large majority of cases it is true, and I do not think we can put aside the fact that short shoes produce bunions. They do not always produce them, but they help, and I do not believe a bunion can be cured by the operation Dr. Ryerson describes. Some of the head of the bone—the articular surface—must be taken off to shorten the great toe. Of course, these people come to us in all conditions and the severe type cannot be absolutely cured. They will always have some trouble and we always tell them so, but we *can relieve them greatly*. Many cases can be cured by proper shoes and care of the feet, and on these we do not operate. Dr. Golden mentions hematoma. I think he is quite right. Unless one is very careful, hematoma forms; this should be aspirated about the second day. Dr. Rugh mentions the type of flap. I have tried all kinds of flaps—from the phalanx with the base backwards, with the base below, and I am of the opinion that the flap in front with the base toward the phalanx is the best. I do not believe that it becomes necrotic; at least, I have had no evidence to point that way.

VACCINE TREATMENT OF HODGKIN'S DISEASE

REPORT OF A CASE

A. R. HATCHER, M.D.
AND
W. G. LEMMON, M.D.
WELLINGTON, KAN.

From 1832, when Hodgkin recorded a series of cases, up to 1913, the treatment of Hodgkin's disease was futile, and the outcome fatal. In the acute forms, death occurred in a few months; while in the chronic type, patients often survived two or three years, during which time remissions of symptoms and size of glands were frequent.

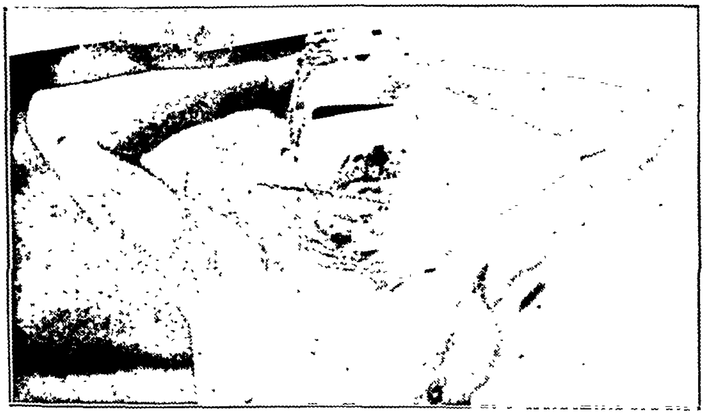

Fig. 1.- -Patient, July 1, 1914, before treatment was begun.

The etiology up to this time was unknown. A few believed it to be a tuberculous or paratuberculous adenitis, some held that it was a form of malignancy, while a few others believed it to be an infection probably entering through the tonsils. In 1910, Fränkel and Much found a gram-positive, non-acid-fast, diphtheroid bacillus in smears from the glands in a series of cases. They believed this bacillus to be the specific cause of the disease. In 1913, Bunting and Yates in America and Negri and Mieremet abroad succeeded in cultivating an organism corresponding to the one found in smears by Fränkel and Much. A little later Billings and Rosenow[1] published results of treatment with vaccines made from the organisms. Their method of preparation comprised growing the organisms on Loeffler's blood serum, ascites agar or blood agar, for from twenty-four to forty-eight hours, suspension in physiologic salt solution, and heating from forty to sixty minutes at 60 C. (140 F.).

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[1] Billings, Frank, and Rosenow, E. C.: The Etiology and Vaccine Treatment of Hodgkin's Disease, The Journal A. M. A., Dec. 13, 1913, p. 2122.

The case which we wish to report was treated by vaccines and the Roentgen ray. There was an intercurrent acute suppurative appendicitis.

History.—A retired farmer, aged 63, married, who had had rheumatism when a child, and occasional attacks of myalgia since, but no other illness, in the latter part of February, 1914, had what he described as "a breaking out on the face." A few days later he noticed swellings beneath the angles of the jaws and ears; these gradually increased in size, and in two or three weeks, swelling was noticeable in the axilla and groins. The tumor formations were never painful, tender or red. He rapidly became weak and emaciated, and complained of extreme nervousness.

Examination.—Tumor formations as shown in Figure 1 were present. The masses apparently consisted of enlarged discrete, nonadherent, painless lymph nodes. The mucous membranes were pale. Physical examination otherwise was negative.

The urine was pale amber, acid, specific gravity 1.008, albumin and sugar negative. Microscopically there were a few hyaline casts and amorphous urates. The red corpuscles in the blood numbered 3,200,000; hemoglobin, from 55 to 60; white blood cells, 7,200; polymorphonuclears, 59; mononuclears, 41.

Treatment.—In June, 1914, one of the glands was taken from the neck and sent to Dr. F. W. Gaarde of Chicago for diagnosis and preparation of autogenous vaccine.

July 1, 1914, vaccine therapy was begun, consisting of subcutaneous injections twice a week for seven weeks. There were no severe reactions. The initial dose was 25,000,000; this was gradually increased to 2,000,000,000, and in addition to this the patient was given Roentgen-ray treatment every five days for eight weeks. He received six injections before there was any amelioration in the symptoms or the size of the glands. After this they gradually reduced to about two thirds of their original size. August 27, he was taken ill with acute suppurative appendicitis. He was operated on, September 8, and an abscess was drained. The tubes were removed on the eighth day, and drainage ceased about the eighteenth. During this time there was an extremely rapid decrease in the size of the glands. With cessation of pus there was a corresponding slackening in the retrogression of the glands which did not cease entirely, but has continued until the present time.

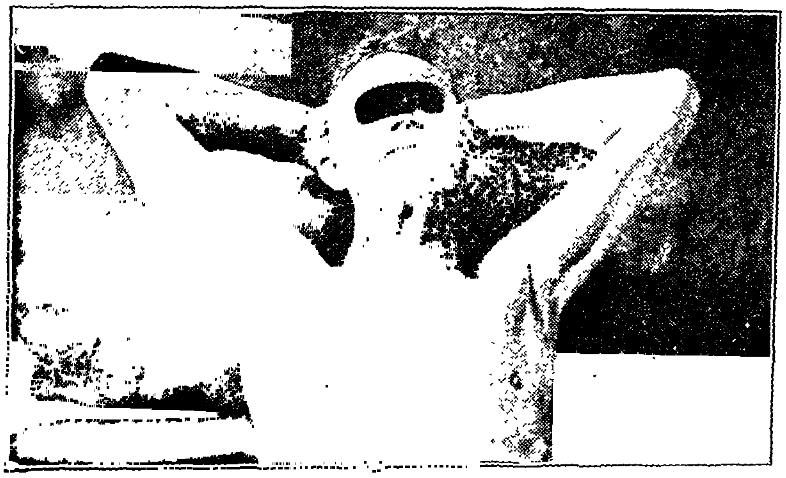


Fig. 2.—Patient, July 1, 1915, showing results of treatment.

Constitutionally, except for a dragging sensation at the site of the scar, the patient feels perfectly well, and is doing his own chore work on the farm.

The question arises as to what influence the pus infection had on the glands. There is no doubt that the toxins from infectious processes at times exercise a profound effect on newly formed tissue, as illustrated by the use of Coley's toxins in sarcoma. The fact, however, that the glands were decreasing under the vaccine treatment, and continued to do so after the infection had cleared up, and that the results are identical with those of Billings and Rosenow, leads us to believe that while the appendicitis may have been a favoring influence, the main results were due to the vaccines.

POLYPUS OF FALLOPIAN TUBE

Lawrence H. Hoffman, M.D., San Francisco
Fellow of the American College of Surgeons

Polypus of the fallopian tube, although mentioned in textbooks of gynecology, is rarely encountered in pelvic surgery. The condition may exist without causing any symptoms and pass unrecognized until it reaches a size to be discovered by palpation during some routine pelvic examination or until the occurrence of rupture of the containing fallopian tube demands operative procedure.

The case I report is interesting on account of its rarity and its simulation of ectopic gestation. I have searched the literature and can find no cases of that nature on record.

History.—The patient, aged 30, married several years, presented herself to Dr. Oscar Mansfeldt with the following history. She had never become pregnant although she had used no preventive measures. Menstruation had always been regular, moderate in quantity, about four days' duration. The April and May menses were normal. The June 1 period was on time but patient menstruated several days longer than usual, with a day's cessation, and a few days of a dark bloody discharge with clots, accompanied by colicky pains in the lower abdomen and slight abdominal distention.

Examination, June 18.—The cervix was conical, of normal consistency. The uterus was normal in size, in axis of pelvis not fixed. A boggy semifluctuating mass was palpable in Douglas' culdesac. The right adnexa was palpable and no abnormality was felt. A mass was felt in the left parametrium about 5 cm. in diameter, immobile, separable from the uterus and tender to the touch. The findings were corroborated by an examination under narcosis June 18, and I was called in consultation to verify the findings. A diagnosis of ectopic gestation was made and operation was decided on and performed June 19.

Operation.—When the peritoneal cavity was opened, by median abdominal incision, some fluid, blood and clots escaped. The left adnexa was represented by a mass 5 cm. in diameter, embedded in blood clots, and ruptured on its superior margin near its distal end. This adnexa was removed typically and the clots evacuated from the peritoneal cavity. The abdomen was closed in four layers. Recovery was uneventful.

The pathologic report, made by Dr. Ophüls, was of rupture of the fallopian tube, which contained a polypus, 2 cm. in diameter, and coagula.

When discussing the case, the existence of ectopic gestation was weighed but the fact that there had been no amenorrhea and that uterine enlargement was absent caused a doubt in our minds. The other symptoms and physical signs were so suggestive of extra-uterine pregnancy that we felt an exploratory operation was demanded, knowing the dangers of such a condition. Until the pathologist's report was received the findings were taken as ectopic pregnancy, and great was our surprise when the true nature of the lesion was disclosed.

530 Butler Building.

Preventive Medicine.—Within the past thirty years in this country the mortality from tuberculosis has been reduced more than half, and with scarlet fever and diphtheria the results have been more striking. Within the past ten years the average life has been increased four years.—Vaughan.

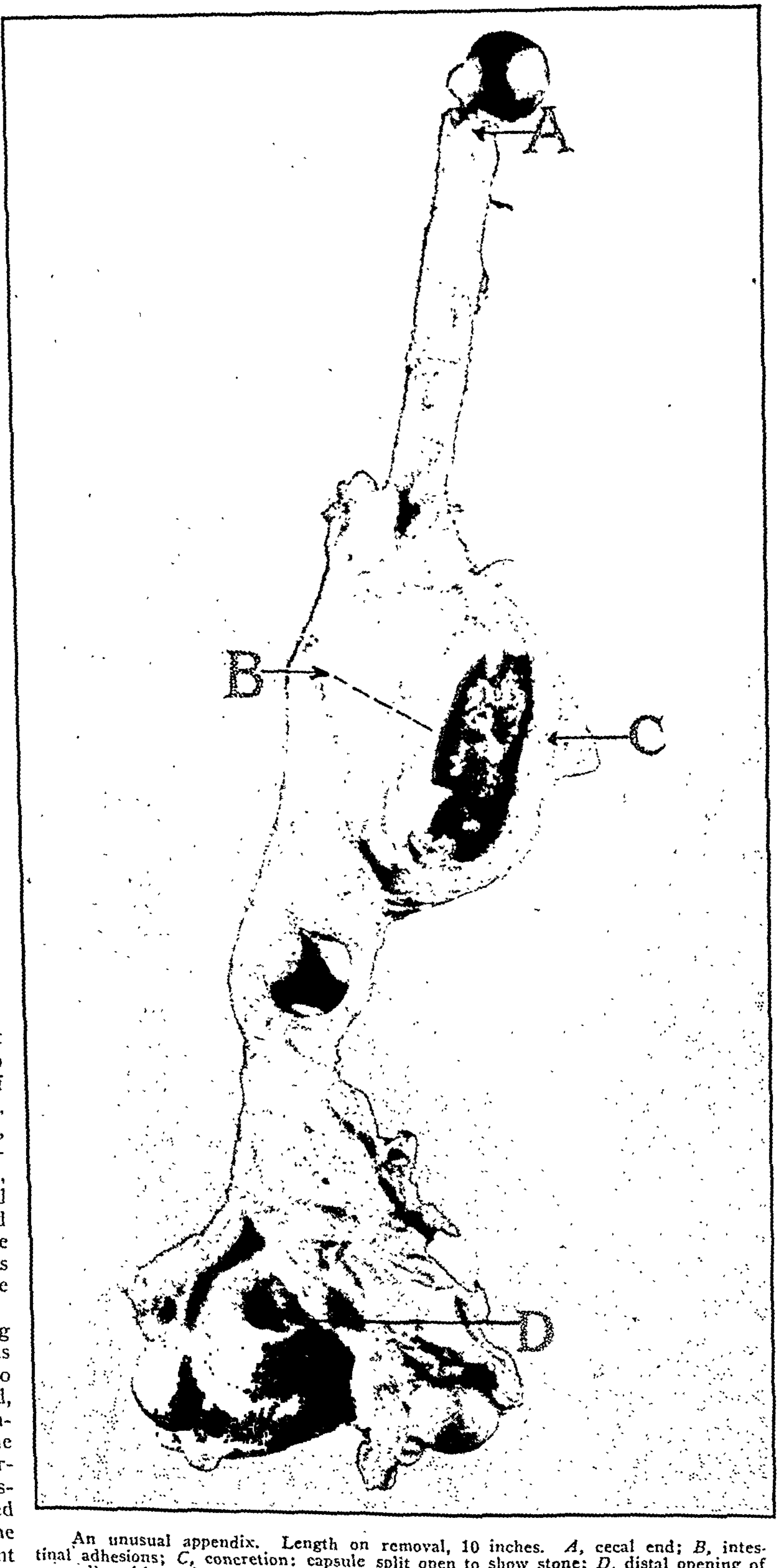
AN UNUSUAL APPENDIX

W. W. Grant, M.D., Denver

The following case is reported because of its interesting and unusual clinical history and remarkable character and dimensions of the pathologic specimen:

G. H., aged 27, came to Colorado in 1907 for a mild tuberculous infection, it is stated, of the apex of the right lung. In 1908 after a year of partial invalidism, he was pronounced well. He has had persistent constipation for ten years with periodic loss of appetite and occasional gastric disturbance, without any assignable cause. For several years past he has been superintendent of mining operations at Creede, Colo. On the night of May 15, 1915, he was taken suddenly with severe pain over the abdomen, which continued for six or eight hours. It was followed by marked tenderness in the lower abdomen for four or five days. Notwithstanding the severity of the attack and tenderness following, he was up and about, and resumed his labors immediately, though he could not straighten his body, on account of discomfort induced, for several days. He then consulted a local physician at his office, who took his temperature and reported it normal. He had no further reminder of trouble until July 25, when, in bed at night, he had the second attack of more intense, acute pain which lasted eight hours. He called no physician and the following morning was up and about as before in every particular.

In ten days, feeling that the trouble was serious, he came to Denver and consulted, at first, two distinguished internists. One thought, from the personal and clinical history and the localized swelling with some glandular involvement in the abdominal wall about the mass, that it was probably tuberculous. The other thought it was connected with the appendix in some unusual way, but its exact character doubtful. He was then referred to me. A well-defined mass, the size of the clenched fist, just below the umbilicus, with its center at the right border of the right rectus muscle, was manifest on palpation. A few slightly enlarged lymph glands could be felt about the mass in the wall of the abdomen. Only slight tympanitis existed. The temperature was 98, and pulse normal. The mass was fairly well circumscribed and extended deep into the cavity of the abdomen. The clinical history and immediate subsequent events were so characteristic of the pain and history of a perforative appendicitis with protective adhesions, that I had no doubt as to the diagnosis though recognizing that tuberculous history might have had some influence in the case.



An unusual appendix. Length on removal, 10 inches. *A*, cecal end; *B*, intestinal adhesions; *C*, concretion: capsule split open to show stone; *D*, distal opening of appendix with perforation.

I operated on him August 7 at St. Luke's Hospital. Temperature 98.2. Incision to the right of the rectus. With the opening of the peritoneum about a pint of bloody serous fluid escaped, due, doubtless, to the pathologic condition of the omentum and partial constriction of the adherent intestines. There were no enlarged mesenteric glands, or other evidence of tuberculosis. The ill-defined mass was covered by partially gangrenous omentum in front, and on all sides was protected by closely adherent small intestines extending to the posterior wall of the peritoneum. By delicate dissection the intestinal and mesenteric adhesions were released from the tumor. During this performance about 1 ounce of colon bacillus pus gradually escaped, but it did not enter the peritoneal cavity. When the body of the tumor was freed the upper portion of the appendix was stripped of adhesions, and as soon as severed from the intestine a very mobile cecum was observed, with no adhesions above the stump of the appendix. When removed the latter measured 10 inches in length. A drainage tube was inserted and left for five or six days. The temperature was normal throughout the convalescence and the recovery was uneventful.

The exterior of the concretion is a hard shell about one sixteenth of an inch thick, with a distinct metallic ring when tapped with a scalpel. The color is yellow, resembling that of cholesterin, and the surface, as shown in the illustration, is thickly studded with sharp spines resembling a cockle burr. The interior was of a soft, putty-like consistence and was not further examined as I desired to preserve the specimen, the size of a large hickory nut, intact. I have never before seen a case with this pathologic condition, of years' duration doubtless, with such a negative clinical history with the exception of the two brief attacks of pain due to perforation. On September 4 he returned to Creede feeling quite well and the wound had perfectly healed.

Mack Block.

TWO FAVUS FAMILIES

J. E. Lane, M.D., New Haven, Conn.

Favus is not a rare disease in this country and there are usually a few cases in all of the dermatologic clinics of our larger cities. In the parts of Europe where it is most prevalent it is a disease of the country rather than of the city. This is probably due to the fact that the families of the peasants live more closely crowded together and under less sanitary conditions than does our rural population. Still the fact that favus has never become common in this country is largely due to the rigid exclusion by the federal authorities of immigrants affected with it.

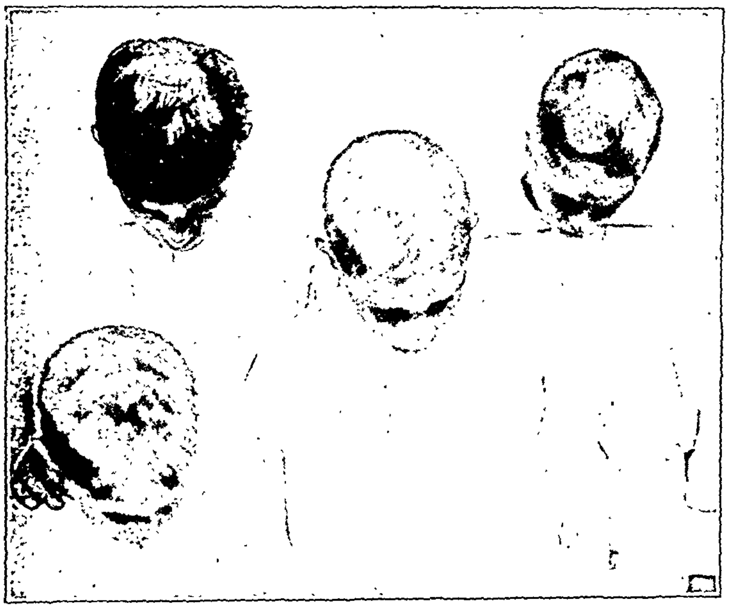


Fig. 1.—Favus in a family of nine, five of whom had the disease.

The following cases illustrate the effect of not properly treating every patient with favus as soon as it is discovered, and the fact that the importance of such treatment is not sufficiently realized in places where it is a rare disease. They also illustrate the fact that favus frequently originates in this country. The impression is still prevalent among many physicians that nearly all cases of favus are found in immigrants, though as long ago as 1896, this was shown by Wende of Buffalo not to be the case. Another point of interest is the rather unusual number of individuals of the same family affected, and the extent of the disease in them.

A few months ago my attention was attracted to the subject by a case of favus in a boy 13 years old, who for five years had been occasionally coming to the dermatologic clinic of the Yale Medical School. A visit to his home disclosed the fact that there were nine children in the family, of whom four others, children aged 10, 8, 6 and 2 years, were affected. The boy of 13 was nearly bald. The disease in the child of 2 was not extensive. In the others, practically the whole of the scalp was involved. None of them had been treated at all except the boy of 13. All of these cases developed in this country, the parents having come from Italy twenty years ago. The extent of the involvement is shown in Figure 1, the photograph having been taken after the removal of the crusts. (In neither family was I ever able to get all five of the children together for a photograph.)

The second family was also Italian, and the parents also came here about twenty years ago. It was discovered by the Visiting Nurses' Association, which had been caring for the other family. In this family there were five children of the ages of 12, 8, 6 and 4 years, and a baby of 10 months. All of the children had favus, and they presented a disgusting appearance, well shown by Figure 2, which was taken before any attempt at cleaning had been made. The scales on the girl's dress, which fell when her cap was taken off, show the ease with which she could scatter the disease if opportunity offered.

All of these cases originated in this country, and I subsequently found out that some of them had been discovered more than five years previously. As favus is not a reportable disease, nothing was done about them, and it was allowed to spread, with the results described. Children with favus are excluded from school, so with the exception of the boy of 13, who at some time or other had been in school for about six months, none of them had ever been in school at all. With the same exception, none of them had had any treatment.

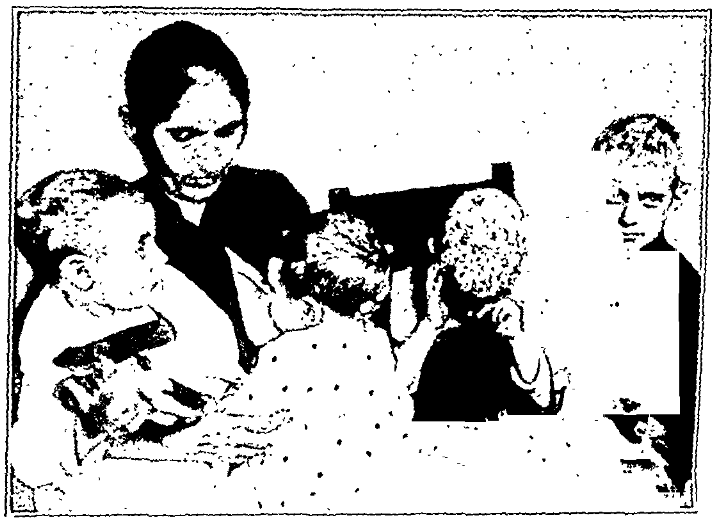


Fig. 2.—All of the five children of this family, of whom four are shown, had favus.

Such a condition not only deprives its victims of an education, but if allowed to continue, deprives them, on account of their disgusting appearance, of practically all means of earning a living until the disease has eradicated itself, which in some cases is not before old age.

It is obvious that favus should be made a reportable disease, and that each case should be properly treated as soon as it is discovered.

Partial Refrigerating Process to Aid in Transportation of Milk.—Our Italian exchange, *Pediatria*, describes a method for keeping milk for long transportation, which has been introduced into the Brazilian province of Minas-Geraes, noted for its dairies. The principle is to cool the milk after pasteurization and pour it into a 300-quart can already containing blocks of frozen milk. The milk is frozen in blocks weighing 22 or 33 pounds, and ten or twelve of these blocks are placed in the large can, which has insolating walls, and the chilled and pasteurized milk is poured over them. Milk which has been thus sealed is said to keep for fifteen or twenty days. When the can is opened the milk is found homogeneous and is said to resemble in every respect the freshly drawn product.

New Instruments and Suggestions

A NEW NECK BANDAGE

A. G. Bettman, M.D., Portland, Ore.

Realizing how difficult it is to apply a dressing high up on the back of the neck and keep it there by the means generally used, I have devised a very simple bandage to accomplish this object by the following procedure:

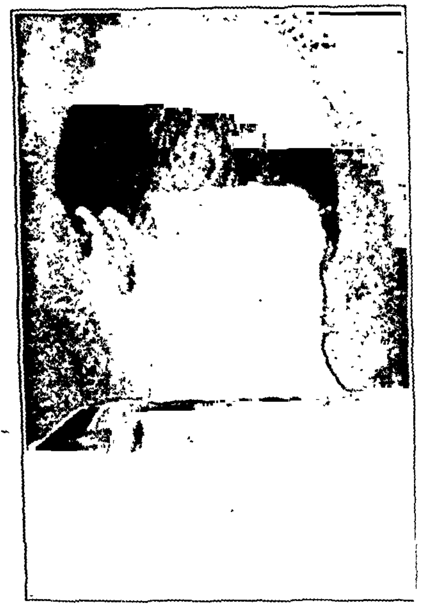


Fig. 1. — Dressings, cardboard and two turns of bandage in place.

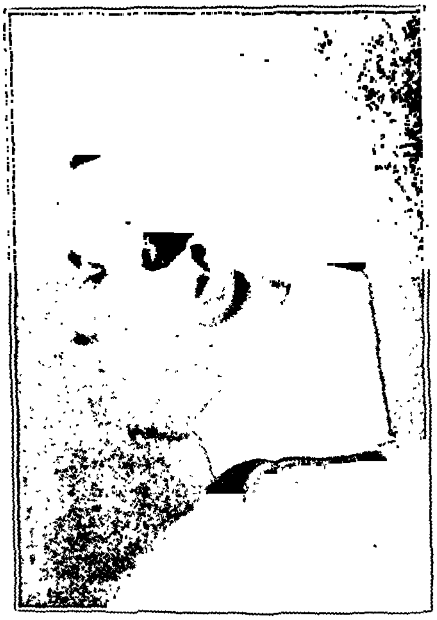


Fig. 2.—Side view of completed bandage.

Put on the dressings in the usual way. Apply a 2-inch bandage twice around the neck, folding it on itself lengthwise the second time around.

Cut a piece of stiff cardboard of suitable size and shape, as shown in Figure 1. Place the lower end of the cardboard in the fold made in the second turn of the bandage. Continue bandaging over the cardboard, fixing an occasional turn over the top. Figure 2 shows the completed bandage.

This bandage I have found very serviceable, especially where the patient objects to having the bandage around the forehead, and adhesive plaster is unsatisfactory.

The advantages are: The bandage is easily and quickly applied. It looks neat and can be made as high as required. It holds the dressings in place. It is not objectionable to the patient. There is no adhesive plaster to annoy the patient.

809 Stevens Building.

A SELF-ILLUMINATED BERGER LOUPE*

Edward A. Shumway, M.D., Philadelphia

I desire to show a simple modification of the Berger loupe, which consists in the attachment to its side of a brass clip to hold the small flashlight, which has the appearance and size of a stylographic pen. The light has a small, one-cell battery, which illuminates a tungsten filament lamp, and has a permanent turn-on arrangement. It can be purchased at any of the electrical supply houses, or instrument shops.

The light rays from the lamp are projected toward the focal point of the Berger loupe, and give sufficient light to illuminate satisfactorily the eye under examination. It has been of especial value, however, in the removal of foreign bodies from the cornea, and in pulling out delicate misplaced cilia from the eyelids, as it gives an independent source of illumination, and leaves both hands free for manipulation of the eyespud, and for holding the patient's eyelids. It has also the advantage of being independent of wires to batteries or rheostats, and can be readily removed from the loupe when illumination is not required.

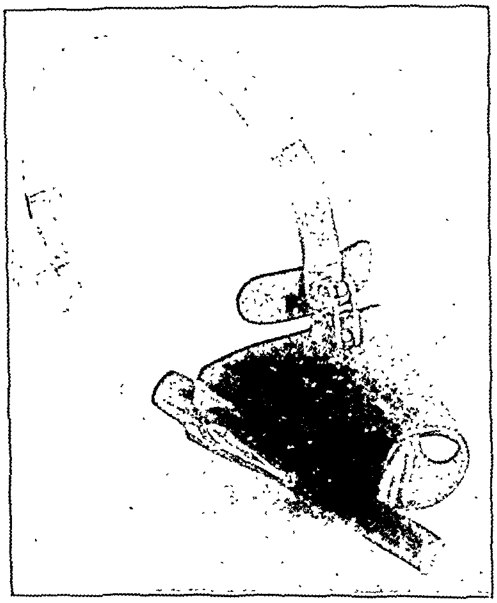
The Zeiss loupe has also a lamp to illuminate the eye, but the instrument is much more expensive, the lamp requires a separate battery or rheostat, and moreover, the focus is rather short—1¼ inches—while the Berger loupe

focus is rather short—1¼ inches—while the Berger loupe

focuses at about 2 inches, giving more space in which to move the spud, or other instrument.

Other arrangements have been employed to illuminate the eye in removing foreign bodies, but they are not sufficient, when the operator requires binocular magnifying power to assist his near sight, and self-illuminated spuds have been unsatisfactory, in my experience, as the illumination is not constant, but varies with the distance of the spud from the eye. Moreover, it is very difficult to get patients to hold their eyes still, as they seem to fear a shock of some sort, when the light from such an instrument, connected by wires to a battery or rheostat, approaches the eye.

The ordinary tungsten lamp furnished by the Ever Ready Company has a plain glass top. For more powerful illumination I have replaced it by an imported lamp, which has a small magnifying lens fused on the top, by means of which the light rays are better concentrated. This makes the apparatus more useful in dispensary work, especially in the examination of inflammatory conditions of the anterior portion of the eyeball or its adnexa, making it usually unnecessary to take patients to a dark room. The loupe has been cut out on each side to remove the obstruction to lateral vision, of which complaint is occasionally made, but this is not a new feature.



Self-illuminated Berger loupe.

The modified apparatus can be obtained from Wall & Ochs, Philadelphia, who will attach the clip and lamp, or furnish the entire outfit.

2007 Chestnut Street.

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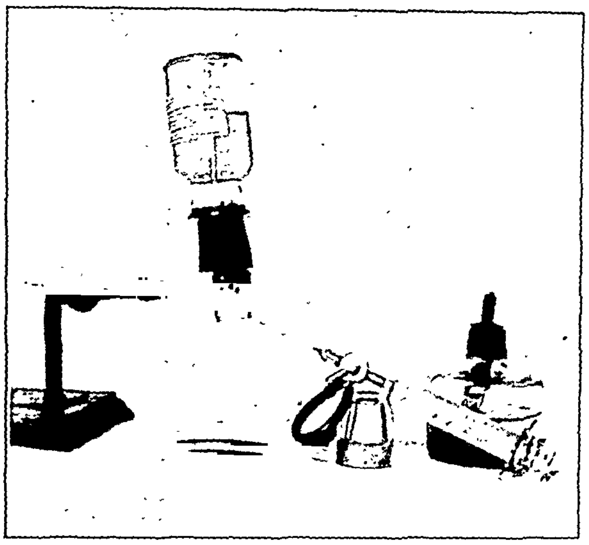
* Shown at the meeting of the American Ophthalmological Society, New London, Conn., July 6, 1915.

RAPID INOCULATION OF LARGE NUMBERS WITH TYPHOID IMMUNIZING VACCINE

E. W. Cleary, M.D., Sugar Pine, Calif.

The immunization of large forces of laborers to typhoid fever by inoculating each individual with the routine series of three doses of prophylactic vaccine is a problem which presents distinct difficulties to the physicians who have to meet it. It is not at all to be compared with the task of the army medical officer, whose patients march with military precision at the hour and to the place which he dictates.

Many workingmen who do not object to vaccination are too inert to go to the doctor's office to be inoculated, or come straggling in at irregular hours, forgetting their appointments for successive doses, and in sundry and several ways dragging out the process of immunization to an impracticable length. Yet a large majority must be immunized in order to render their community reasonably safe. To get such a majority it is necessary to go to the men and inoculate them when they are gathered together for work. Employers naturally object to shutting down a large plant to give opportunity for wholesale vaccination of employees, and, in consequence, vaccination must be done either during the noon hour or at night as the men are leaving their work.



Apparatus used in rapid inoculation of typhoid prophylactic vaccine.

A method of vaccination practicable under such limitations must be safe, simple and rapid. It must be safe outdoors or in dusty buildings, simple enough to be carried out by one physician with untrained assistants, and rapid enough to accomplish the inoculation of a large number in a very short time.

I have used the apparatus shown in the illustration in about 300 cases with entire satisfaction. The apparatus consists of a 5-c.c. Lüer syringe, a three-way metal stopcock, a platinum intramuscular needle (the smaller needles were found too fragile), a No. 18 French soft rubber catheter and a cork pierced by one long and one short glass tube. These articles are all sterilized by boiling. The vaccine bottle used was the 2-ounce, wide-mouthed, prescription bottle in which the sterile vaccine was supplied. When one such bottle was emptied, the cork connected to the syringe was simply transferred to a full bottle. The illustration shows arrangement of syringe, stopcock and needle with catheter connected to a third way of stopcock and, by its other end, to the short glass tube passing just through the cork of the vaccine bottle. The longer glass tube extends above the surface of the vaccine in the inverted bottle, and serves as a vent. If there is any question of contamination of the vaccine from air entering through this vent, it can be loosely plugged with sterile cotton. When one is working in a draft, it is best to provide a shield for the alcohol lamp used for flaming the needle.

When one is vaccinating with this apparatus, three assistants are employed. The first rolls up the sleeve and touches the arm with tincture of iodin, the second shakes the inverted vaccine bottle constantly to insure an even suspension of bacteria, and the third keeps the records. With the third way of the stopcock open, the syringe is filled from the vaccine bottle, then the third way closed, and the channel to the needle opened by giving the lever of the cock a quarter turn. As the vaccine enters by gravity into the syringe through the larger opening in the stopcock, absolutely no air is drawn into the syringe, and the plunger may be pulled back with one rapid stroke, filling the syringe barrel accurately to the 5-c.c. mark. One c.c. of the vaccine is injected just beneath the skin through the iodized area over the insertion of the deltoid. The needle is flamed over the alcohol lamp before each injection. In using the 5-c.c. syringe, five men are inoculated before the syringe is refilled. It was found that by doing this, five or more injections could be made per minute, thus giving little time for uneven dosage to result from settling in the syringe. When injections are made slowly, it is better to use a small syringe and fill for each injection.

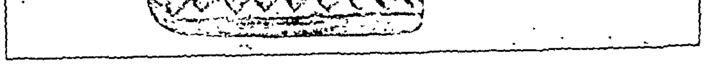
The advantages of this method over the method in which the vaccine is drawn into the syringe by thrusting the needle through the rubber cap of the vaccine bottle are obvious. Any one who has filled a vaccine syringe by the last-mentioned method knows that more or less air is drawn into the syringe, and that on this account much time is consumed in adjusting the syringe load for accurate dosage.

The rapidity of the method described in this paper made it possible, without compulsion, to immunize so large a proportion of the working men in the community in which it was used as to insure against a repetition of such a disastrous typhoid epidemic as had paralyzed industry and taken a toll of several lives from the neighborhood several years before. The extreme simplicity of the operation and the rapidity with which it can be done so minimizes the conception of the serious nature of the process in the minds of the workingmen that many submit who would recoil from a slower or more complicated procedure. The fact that out of a total of nearly 900 doses injected not a single infection, nor even a single unduly severe reaction, occurred evidences the safety and accuracy of the method. The Gay-Claypole vaccine furnished by the California State Board of Health was used.

NEW ARTERY FORCEPS

Carleton Dederer, M.D., Los Angeles
Clinician in Surgery, Los Angeles Department, University of California Medical College

Kocher overcame the difficulty of having the jaws of artery forceps slide across each other laterally by devising the "mouse tooth" at the end. In this pair of forceps nature is imitated by the formation of jaws and teeth which bite firmly without incising. This has been done by making on one jaw a double row of pyramids quite similar in shape to the famous Egyptian pyramids and on the other jaw a series of complementary impressions, all of which give a bite which can be regulated in intensity by the degree of pressure applied.



New artery forceps and magnified model of a portion of one jaw.

This forceps is 6½ inches long and has the new style handle[1] eliminating all acute angles where sutures, ligatures and instruments usually catch.

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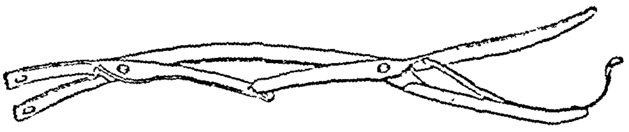
[1] Dederer, Carleton: Time-Saving Forceps, The Journal A. M. A., April 17, 1915, p. 1318.

TONSIL FORCEPS

W. P. Megrail, M.D., Wheeling, W. Va.

This instrument is curved throughout its entire length so that a large part of it and the operator's hand is entirely outside the line of vision, which gives an unobstructed field for operation. It has a compound lever handle which makes a firm grip on the tonsil with a very slight grasp of the fingers. The handles work close, permitting the tonsillotome or snare to be readily passed over them. It also may often be found to be a useful instrument for extracting foreign bodies from the pharynx or esophagus.



Tonsil forceps which may be used for extracting foreign bodies from pharynx or esophagus.

Penn and Zane Streets.

A SIMPLE METHOD OF TRANSFUSION IN HEMORRHAGE OF THE NEW-BORN, WITH REPORT OF A CASE

W. S. Howard, M.D., Chicago

The only apparatus required in this method is a 20-c.c. ground glass syringe with a needle 2 or 3 inches long.

After sterilization of the syringe and needle, 2 c.c. of a 10 per cent. sodium citrate solution is drawn into it. The needle is then inserted into the vein of the donor, the syringe filled and withdrawn. The anterior fontanel region of the infant having been previously cleaned with alcohol and tincture of iodin, the needle is pushed into the superior longitudinal sinus and the syringe emptied. This may be repeated several times if necessary. A smaller needle than the one for the sinus may be used on the vein of the donor if desired.

For entering the sinus the needle is inserted at the superior angle of the fontanel at an angle of about 25 degrees with the scalp. When the needle enters the sinus there is a distinct sensation of decreased resistance perceptible. The sodium citrate solution is used to prevent the rapid coagulation of the blood. Two c.c. of a 10 per cent. solution will make the entire contents of the syringe contain only 1 per cent. of sodium citrate, which has apparently no deleterious effect on the blood.

The advantage of this method is the extreme simplicity of technic. It can be done at almost any place, on short notice, with very simple apparatus, and does not require any great amount of surgical skill for its execution.

The use of the longitudinal sinus in infants for aspiration, infusion and transfusion has been recommended by Helmholz (*Am. Jour. Dis. Child.*, September, 1915, p. 194) and Unger (The Journal, Feb. 13, 1915, p. 582). Unger's method for transfusion requires a special apparatus which is described in the article referred to.

REPORT OF CASE ON PEDIATRIC SERVICE OF DR. F. X. WALLS

Baby B., boy, colored, was born at St. Luke's Hospital, Sept. 7, 1915. Labor normal. Birth weight 6 pounds, 11 ounces. Apparently normal in every respect. The mother is a quadroon, aged 30. Had measles during infancy. Has always been in good health ever since. Has had four children and one abortion at third month. All labors have been normal. Second child died at age of 2 months, of malnutrition. Had the abortion in 1910, one year following the birth of the third child. Father is colored, aged 44; has always been well with exception of slight gastric disturbances.

Patient was apparently normal until the morning of Sept. 9, 1915, when there was a very free hemorrhage from the bowels. This was of a rather bright red color and estimated to be at least an ounce in quantity. At 11:45 a. m. a similar hemorrhage occurred. The infant at this time seemed to be in very poor condition. It was very restless and irritable. There were convulsive movements of the arms and legs, and it yawned constantly. After consent of Dr. Walls had been obtained, 18 c.c. of blood were transfused into the longitudinal sinus by the method described above, the donor being one of the nurses. At 12:40 p. m. another free hemorrhage occurred, and again 18 c.c. of blood were transfused, the donor this time being the father. By this time the baby was in a more apathetic state. It promptly regurgitated all food, the emesis being of a dark color. At 5 p. m. the third free hemorrhage occurred, and 18 c.c. of blood were again transfused from the first donor.

Following this there were slight passages of tarlike stools but no more hemorrhages.

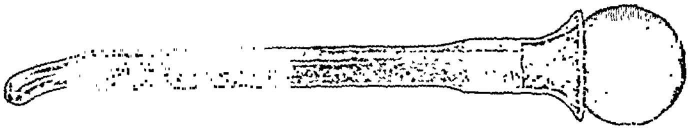
The following day the stools were yellow, the emesis had ceased, and the general condition was much improved. There have been no further evidences of hemorrhage up to the present time. The infant nurses well, has no discomfort following, and is apparently normal in every respect.

St. Luke's Hospital.

URETHRAL SYRINGE

F. A. Van Buren, M.D., Omaha

This syringe was designed for treatment of the female urethra, especially in gonorrheal infections. It is difficult to get a satisfactory syringe, of the piston type, which is positive in action. If the piston is tight enough to insure nonleakage the action is so stiff that one cannot accurately control the pressure or the amount of medication injected. This instrument possesses these advantages over the push type: It is inexpensive, easily cleaned and sterilized by boiling, and is positive in action for the life of the instrument as new bulbs may be obtained. A small hole in the neck of the bulb prevents medication from entering the bulb, thus permitting injection from any position; the tip has the correct curve and caliber for the female urethra. A little pressure against the meatus prevents the fluid escaping, dilates or irons out all folds in the mucosa, thus permitting the fluid injected to reach all parts; more pressure will force the fluid into the bladder if desired.



Syringe designed for treatment of urethral infections in females.

468 Brandeis Theater Building.

Health on the Farm.—The death rate in the rural communities of New York state is higher than that of the crowded city of New York. It still amounts to about 15 per thousand since 1900, while in the city of New York the death rate has dropped about one-third in the last fifteen years. The New York State Department of Health in *Health News* has published papers by various experts to enable the farmer and the country dweller to improve health conditions. It is said that the farmer must be his own sanitary engineer and board of health to a large extent. Among the things he must look out for are proper disposal of wastes, pure water and milk supplies, freedom from insect pests, habits of personal cleanliness, and moderation in all things. The bulletin contains papers by L. H. Bailey on "Good Health and Good Farming," by Henry N. Ogden on "The Farm Water Supply," by Theodore Horton on the "Disposal of Human Excreta and Sewage of the Country Home," by Dr. Alvah H. Doty, New York, on "The Extermination of the Mosquito," and by Dr. William B. May, Albany, on "Health Conditions on Picnic Grounds."

Therapeutics

PLANT POISONING

PRIMROSE

This poisoning is not infrequent, though generally perhaps it is unrecognized, the condition being called acute eczema.[1]

Sharpe[2] thinks that the dermatitis not infrequently seen on the hands of milkers may sometimes be due to the fact that the poisonous substance of the wild primrose is carried on the udders of the cows.

It has been noted that primrose plants do not readily become infected with insects. Montgomery[3] thinks that the cause of this immunity may be the poison exuded by the plants.

The hands and arms are the parts most attacked by the primrose, and the symptoms are burning, puffing, and at times small pin-point blisters. There is also a good deal of itching.

The primary treatment is to recognize and remove the cause. Magnesium sulphate solutions are generally satisfactory in relieving the inflammation. As is true of all acute skin eruptions, catharsis and a milk and cereal diet will hasten the recovery.

IVY, OAK AND SUMACH

While on the subject of plant poisoning it may be well to recall the experimental work done on this subject by Adelung[4] two years ago. Though these plants differ botanically, Adelung finds that their poisonous juices are chemically identical, and this poison is nonvolatile. It has been shown that as little as $1/1000$ of a milligram may produce a dermatitis.

It is now known that the poison of the ivy is of a resinous nature.[5] As it is generally agreed by analysts that the poison is nonvolatile, the assertion that certain susceptible persons may be poisoned by simply passing by the plants remains to be explained. It is certain that neither the pollen nor the plant hairs are toxic,[6] so that direct transmission is the only plausible explanation. As previously shown,[7] Adelung also found that the poison was purely a local one. It is not distributed by the blood.

The latent period or length of time from the infection to the development of the dermatitis is shorter on the parts of the body where the skin is the thinnest, such as the face and the inner sides of the arms and wrists. As is well known, there is a varying susceptibility of individuals, though there seems to be no natural immunity (as shown experimentally). It is a popular idea, however, and seems to be a fact, that some persons may handle the poison ivy, for instance, with impunity. On the other hand, susceptible persons seem to vary as to their susceptibility in different seasons or in different years. This may be entirely due to the variability of the irritant poison.

Adelung found that the rhus plant would yield a pure toxin of about $1/1000$ of its weight. He believes this toxin has a selective action for the epithelial cells. Experimentally Adelung could not demonstrate that immune bodies were formed in the blood or that there were any immune bodies contained in the blood of an individual who was more or less immune to the poison.

Treatment.—If, immediately after exposure to the poison, the parts supposed to be affected are washed with soap and hot water, dermatitis generally will not occur. If it is known that just one small part of the body, as one part of the hand or finger, has touched the poison, the full strength tincture of iodin applied to the part will destroy the poison, according to Adelung.

Protection against poisoning is more or less furnished by oils or fats, as cottonseed oil, smeared over the exposed parts of the body. Any one who is susceptible to such poisoning and knows that he has been exposed, should use, besides the local soap and water, a general hot bath, and should be sure that the possibly infected outer clothing is not again worn until thoroughly brushed and aired.

A strong solution of magnesium sulphate is perhaps one of the best local applications for the dermatitis when it develops. It relieves the itching and limits the inflammation. Other more or less successful treatments are oil or ointment containing ichthyol, potassium permanganate solutions, or the old lead and opium wash. Many people, however, are very susceptible to lead solutions unless they are very weak, and also if the skin is broken too much absorption of lead may occur. As just advised, the magnesium sulphate solution is probably the best treatment. As soon as the acute inflammation is over, any simple talcum powder, or powdered corn starch, is very soothing to the skin.

SUDDEN HEART FAILURE

A correspondent requests a discussion of "an efficient treatment for sudden cardiac failure."

No dogmatic rules can be laid down for the treatment of this condition. The following are suggestions:

1. Put the patient flat on a bed, with the feet elevated, unless it is a case of cardiac dyspnea, in which case he should recline on several pillows.
2. Put a hot water bag over the cardiac region.
3. Use smelling salts for quick momentary stimulation.
4. Give one-half a teaspoonful of aromatic ammonia, in twice the amount of water, if it is at hand.
5. Strychnin sulphate, $1/30$ grain, may be given hypodermically as a stimulant to the central nervous system and to the cardiac nerves.
6. Hot coffee may be given by the mouth.
7. An injection of the contents of an ampule of camphor in oil may be given intramuscularly.
8. Epinephrin may be given in a dose of 5 drops on the tongue, which may be repeated in half an hour if advisable.

All of the foregoing are quick-acting treatments.

9. A little slower than these is the blood-pressure-raising substance of the posterior lobe of the pituitary gland. An ampule of this liquid may be injected hypodermatically, and repeated in two or three hours, if needed.
10. A little slower to act are the contents of a sterile tube of strophanthin, given intravenously. This must not be given if the patient has been taking digitalis, and should rarely be repeated.
11. Slow to act, but projecting its influence for nearly twenty-four hours, is digitalis, best in the form of an ampule of digipuratum fluid, given hypodermically. This should ordinarily be given but once

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[1] Foerster, O. H.: The Journal A. M. A., Aug. 20, 1910, p. 642.
[2] Sharpe, H. A.: The Journal A. M. A., Dec. 14, 1912, p. 2148.
[3] Montgomery: California State Jour. Med., August, 1915, p. 306.
[4] Adelung: Arch. Int. Med., February, 1913, p. 148.
[5] Stevens and Warren: Am. Jour. Pharm., November, 1907, p. 518.
[6] Warren: Am. Jour. Pharm., December, 1913, p. 547.
[7] Chestnut: Farmers' Bulletin 86, U. S. Dept. Agric.

in twenty-four hours, and certainly not repeated for twelve hours.

12. With low blood-pressure and a fairly strong heart an aseptic preparation of ergot, given intramuscularly, is often of great value in aiding to save a patient with heart failure.

It is hardly necessary to urge that the cause of the heart failure be determined. A quick blood count will show whether or not there is internal hemorrhage.

Of course it is not necessary to use all of the above-mentioned drugs, and they are only suggestions.

More detailed discussion of "Acute Heart Attacks" and of "Shock" will be found in The Journal, "Disturbances of the Heart," Dec. 21, 1912, p. 2256, and March 29, 1913, p. 996, respectively. A short discussion on "Heart Tire" appeared in this department, Oct. 2, 1915, p. 1184.

HEMOPHILIA

In a severe case of hemophilia in a child of 8, after having carried out the measures usually employed without satisfactory results, a physician asks for suggestions as to treatment and references to recent literature. The following may be offered:

When the part can be reached externally, bleeding may be stopped by pressure, by suprarenal solutions, by hydrogen peroxid solutions, sometimes by gelatin, by thrombokinase in the form of extract of lymph glands, thymus, testis or other source of nucleoprotein, and by many iron salts. It is not desirable to use iron if it can be avoided on account of the disagreeable coagulum that forms and the danger of infection and suppuration underneath.

Bleeding from the stomach may be temporarily stopped by ice, suprarenal solutions, and tannic acid.

The tendency to bleed is due to a blood dyscrasia, and can be prevented only by a change in the character of the blood. Calcium, in the form of calcium lactate or calcium glycerophosphate, may be of value, and its administration for a few days may sometimes prevent profuse bleeding in bleeders, even during or after an operation. A diminished amount of calcium in the blood may be due to increased loss of calcium. Overactivity of the ovaries in adult females, it is said, increases the loss of calcium and the bones become soft. The parathyroids are also believed to have something to do with calcium supply and elimination. It is possible that feeding parathyroid gland substance in hemophilic children may be of value.

The feeding of suprarenal gland has been unsuccessful. The blood-vessel-constricting principle of the suprarenal gland is absorbed from the mouth or mucous membranes, or will act for a short time when injected subcutaneously, but suprarenal, as a whole, when fed, seems to be of little value. The blood pressure raising stuff does not act after the suprarenal substance has been swallowed into the stomach; at best, it acts only locally. Though in normal individuals, especially women, thyroid substance tends to promote bleeding, instances occur in which it seems valuable in stopping bleeding. Just what other glands are stimulated by feeding thyroid, with the effect of changing noncoagulable blood, is not known. It is, however, a clinical fact that not infrequently profuse bleeding is stopped by the feeding of thyroid.

As pituitary substance from the posterior portion of the gland is known to stimulate the suprarenal glands, it might be logical to feed this substance.

The most successful immediate treatment of profuse hemophilic bleeding is blood serum. The serum may be prepared from any human being, a relative often preferred, whose blood shows normal coagulability. A number of cases of successful treatment with blood serum are now on record.

Horse serum also seems to be successful, given subcutaneously, as is diphtheria antitoxin.

The following articles on hemophilia may be consulted:

Normal Blood-Serum in Hemophilia, Queries and Minor Notes, The Journal, Nov. 30, 1912, p. 1993.
Blood-Serum in Hemophilia, Current Comment, The Journal, Oct. 26, 1912, p. 1549.
Schloessmann, H.: Tissue Extract in Treatment of Hemophilia, *Beitr. z. klin. Chir.*, August, 1912; abstr., The Journal, Oct. 19, 1915, p. 1495.
Clough, F. E.: Interesting Case of Hemophilia Treated with Repeated Injections of Blood-Serum, The Journal, July 12, 1912, p. 121.
Claybrook, E. B.: Case of Hemophilia, The Journal, Oct. 28, 1912, p. 1540.
Traver, A. H.: Hemophilia Treated with Human Blood-Serum, The Journal, Jan. 4, 1913, p. 44.
Judd, A.: Decanted Blood-Serum after Severe Hemorrhage and in Hemophilia, Report of Two Cases, *Med. Rec.*, New York, April 17, 1915; abstr., The Journal, May 1, 1915.
Dolmage, G. F.: Case of Hemophilia Treated with Horse Serum, *Jour. Iowa State Med. Assn.*, March, 1915.

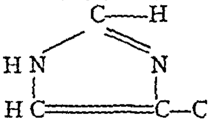
New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

HISTAMINE HYDROCHLORIDE.—



$-CH_2.CH_2.NH_2.HCl$.—The hydrochloride of the base beta-iminazolylethylamine (histamine). Histamine is closely related to histidine, from which it differs in that one molecule of carbon dioxide has been eliminated.

Actions and Uses.—Histamine hydrochloride has a powerful contractile action on certain muscular fibers and a strong vasoconstrictor action. The available evidence does not warrant a recommendation for its therapeutic use, but it is a valuable reagent for the standardization of pituitary and similar preparations.

Histamine was first prepared synthetically from iminazolylpropionic acid by Windaus and Vogt in 1907 (*Ber. d. deutsch. chem. Gesellsch.*, 1907, xl, 3691); it was then prepared by bacterial putrefaction of histidine in 1910 by Ackerman (*Ztschr. physiol. Chem.*, 1910, x, 504) and isolated from ergot in 1910 simultaneously by Kutscher (*Zentralb. f. Physiol.*, Vol. 24, p. 163) and Barger and Dale (*Pharm. Jour.*, June 4, 1910, p. 710; June 18, 1911, p. 757).

Histamine hydrochloride melts at 240 C. (Corr.).

When picric acid is added to an aqueous 1 per cent. solution of histamine hydrochloride, histamine picrate is precipitated promptly; the precipitate should melt at 234 C. (Corr.). Any impurity present in the histamine hydrochloride will prevent or at least very much retard the precipitation of this picrate.

If a 1: 1,000 solution of histamine hydrochloride is made alkaline with sodium hydroxide and a solution of diazobenzosulphonic acid (Pauly's reagent) made alkaline with sodium hydroxide be added, a cherry red color appears.

If a 1: 1,000 solution of histamine hydrochloride is mixed with an excess of bromine water, then boiled until the bromine is evaporated and sodium hydroxide added to the solution, a black discoloration occurs.

Proprietary Preparations:

IMIDO Roche.—A name applied to histamine hydrochloride.

Manufactured by F. Hoffmann-LaRoche and Co., Basel, Switzerland (Hoffmann-LaRoche Chemical Works, New York). No U. S. patent or trade-mark.

Ampules Imido Roche.—Each ampule contains 1.1 Cc. of an aqueous 1: 1,000 solution of imido Roche (1 Cc. contains 1 mg.).

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SATURDAY, OCTOBER 16, 1915

THE PROBLEM OF RURAL HEALTH ADMINISTRATION

The problem of securing efficient administration of public health laws is especially difficult in the rural districts. City and town can today obtain the best health service for which they are prepared to pay. The small community, on the other hand, unless the circumstances are exceptional, cannot command the various kinds of expert knowledge, medical and sanitary, chemical, bacteriologic, engineering and statistical, which are essential for the adequate handling of its problems.

Attempts along several different lines have been made to meet this need. In many Southern states, health officers are provided for on the basis of county units. In Massachusetts an interesting plan of voluntary community cooperation has been worked out under the guidance of the public health faculty of the Massachusetts Institute of Technology. The most promising plan of all is perhaps the organization of a corps of state sanitary supervisors, acting under the direction of the state board of health and bringing to the support of the local health officer the technical knowledge and the moral support of the entire state.

This system has been in force in Massachusetts, in one form or another, for nearly ten years. It has been incorporated in the new public health law of Maryland, and two years ago was made part of the model health law of New York State.

Those who have followed the development of state health organization in this country noted with satisfaction how the attacks made by the legislature on the New York health law last spring were in the main brought to naught by the remarkable support which that law received from the press and the people of the state. What the politicians dared not do openly they attempted, however, to effect by the familiar method of indirection. It appears that while the plan to cut down the number of state sanitary supervisors in New York from twenty to ten was abandoned, the appropriations made allow only for ten of these important functionaries. If the next legislature does not make special provision for this need, the work of the New York state department will be seriously crippled.

It is gratifying to observe that Governor Whitman, in his address of welcome to the American Public Health Association at Rochester, on September 7, placed himself fairly on record against such petty politics. He said:

> I greatly regret that the legislature at its last session did not make appropriations adequate to fully maintain the work of certain divisions of the state department of health, especially the division of sanitary supervisors, whose work has proved most important and beneficial to the local communities, and by means of whom the knowledge and skill of the expert sanitarians of the department of health are placed at the disposal of the health officers of even the most remote rural districts. I sincerely hope that some means may be found by which the services of these physicians may be retained, and feel confident that next year, when the members of the legislature are made fully acquainted with the facts as to the value of these services, funds will be provided for their continuance. I shall use my influence to attain this end, for while rigid economy in the administration of the finances of the state is essential, savings in expenditure attained through decreased efficiency in health work are not only unwise, but resolve themselves, in the end, into irreparable waste of the most valuable resources of the commonwealth.

TRANSFUSION OF BLOOD

The recent review by Ottenberg and Libman[1] of 212 transfusions performed at Mount Sinai Hospital is a good index of the favor with which this form of therapy is being received. The most impressive part of this report deals with forty-two instances in which transfusion appears to have saved life; twenty-nine of the patients were discharged as well, while thirteen were saved from immediate death, although they continued to suffer from chronic ailments. While these and other results demonstrate that transfusion is no small factor in saving life, only a limited number of surgeons feel capable of doing transfusion with reasonable certainty of success. A brief consideration of the present status of the technic of transfusion, therefore, seems not untimely.

Current literature is so replete with papers on the subject that it is difficult to select a simple method for use. Blood transfusion was employed with reputed good results long before the advent of modern surgery. Recent interest, however, dates chiefly from Carrel's excellent work on the suture of blood vessels, and Crile's transfusion by means of metal cannulas.

Brewer and Leggett[2] first used paraffin-coated glass tubes for the conduction of the blood. Curtis and David[3] introduced the use of a large paraffin-coated glass bulb which permits accurate measurement and satisfactory transfer of blood from donor to recipient.

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[1] Ottenberg, R., and Libman, E.: Blood Transfusion: Indications, Results, General Management, Am. Jour. Med. Sc., 1915, cl, 36.

[2] Brewer, G. E., and Leggett, N. B.: Direct Blood Transfusion by Means of Paraffin-Coated Glass Tubes, Surg., Gynec. and Obst., 1909, ix, 293.

[3] Curtis, A. H., and David, V. C.: Transfusion of Blood by a New Method, Allowing Accurate Measurement, The Journal A. M. A., Jan. 7, 1911, p. 35; The Transfusion of Blood, Oct. 28, 1911, p. 1453.

A similar device later invented by Kimpton and Brown[4] has been extensively used with gratifying results.

Lindeman[5] employs sets of ingenious trocar-cannulas to which syringes are attached. The use of salt solution aided by frequent change of syringes prevents clotting. Lindeman's method has met much favor in transfusion at Mount Sinai Hospital. Unger[6] recently evolved a modified syringe method which minimizes traumatism of the vessels and alternately washes out the vessels of the donor and recipient with salt solution.

To prevent clotting — a factor to be reckoned with in any method — Satterlee and Hooker[7] advocate herudin (leech venom), a substance which inhibits coagulation but seems not always devoid of toxic effects. It is not improbable that various preparations differ considerably in the amount of toxin contained. Sodium citrate solution, extensively employed by laboratory workers to prevent coagulation, has been warmly advocated by Weil,[8] and more recently by Lewisohn.[9] The evidence at hand in Lewisohn's report indicates that this solution, when diluted to a point at which it may be introduced freely into the circulation, is still capable of inhibiting coagulation. The most efficacious and generally satisfactory sodium-citrate-blood mixture is as yet unsettled, and perhaps varies according to the blood used; but citrate in a proportion not greater than 0.2 per cent. appears to be satisfactory. In this issue of THE JOURNAL, Simons[10] reports certain experiences which lead him to condemn the use of sodium citrate to prevent coagulation of the transfused blood, so that results of further observation will be required before the availability of the citrate method is determined.

In selecting a donor, two things must be guarded against: First, the transmission of disease, notably syphilis, must be avoided; second, the possibility of hemolysis and agglutination must be excluded. When urgency or lack of laboratory facilities demand, members of the immediate family offer the minimum risk. In all other instances, the Wassermann test and examination for hemolysis of the donor's blood by that of the recipient are necessary. For the latter, the recently described procedure of Rous and Turner[11] is commendable for its simplicity.

To summarize: One who is possessed of average surgical ability can learn to do transfusion; a good technic should be acquired by preliminary work on dogs before human transfusion is attempted. It must, moreover, be recognized that, although many devices now employed yield good results in practiced hands, painstaking care and accurate technic are always necessary. Among the devices which have been successfully used in large series of cases are the glass bulb of Curtis and David, the cylinder of Kimpton and Brown, and the syringe sets of Lindeman. The recent "modified syringe method" of Unger promises much. It would seem probable that eventually through the discovery of harmless anticoagulating methods, transfusion will become a simple procedure. In the meantime, there is no doubt that a more widespread attention on the part of surgeons to the mastery of a good technic of transfusion would be the means of saving many lives.

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[4] Kimpton, A. R., and Brown, J. H.: A New and Simple Method of Transfusion, THE JOURNAL A. M. A., July 12, 1913, p. 117.

[5] Lindeman, Edward: Simple Syringe Transfusion with Special Cannulas, Am. Jour. Dis. Child., July, 1913, p. 28. Blood Transfusion: Report of 135 Transfusions by the Syringe Cannula System, THE JOURNAL A. M. A., March 28, 1914, p. 993. Blood Transfusion by the Syringe Cannula System, Oct. 31, 1914, p. 1542.

[6] Unger, L. J.: A New Method of Syringe Transfusion, THE JOURNAL A. M. A., Feb. 13, 1915, p. 582.

[7] Satterlee, H. S., and Hooker, R. S.: The Use of Herudin in the Transfusion of Blood, THE JOURNAL A. M. A., June 6, 1914, p. 1781.

[8] Weil, Richard: Sodium Citrate in the Transfusion of Blood, THE JOURNAL A. M. A., Jan. 30. 1915, p. 425.

[9] Lewisohn, R.: Blood Transfusion by Citrate Method, Surg., Gynec. and Obst., 1915, xxi, 37.

[10] Simons, Irving: Experiences with the Sodium Citrate Method of Indirect Transfusion of Blood (Lewisohn), THE JOURNAL A. M. A., this issue, p. 1339.

[11] Rous, Peyton, and Turner, J. R.: A Rapid and Simple Method of Testing Donors for Transfusion, THE JOURNAL A. M. A., June 12, 1915, p. 1980.

THE PROBLEM OF SECRETORY NERVES FOR THE THYROID

Evidence which has been presented in favor of the existence of true secretory nerves controlling the thyroid glands has already been reviewed in THE JOURNAL.[1] Among the latest investigators to follow the earlier lead of Asher of Berne, in adducing physiologic evidence supposed to support the view that the glands are under the domination of a nervous mechanism, are Beebe and his collaborators. They base their conclusion on the observation that prolonged stimulation of the thyroid nerves causes a slight reduction in the iodin content of these secretory structures.

It cannot be denied that a histologic basis for the views here referred to exists. Both the vessels and the cells of the thyroids are abundantly supplied with nerve fibers. Vasomotor impulses can readily find a nervous path to the gland. Such structural facts, however, do not conclusively demonstrate the functional necessity of these nervous accessories in the normal activities of the thyroids. There are, today, numerous available illustrations of glandular mechanisms well supplied with nervous structures which nevertheless receive their activating influences through the medium of the circulation. They are stimulated, we now say, by hormones.

Under certain conditions, thyroidal tissue may readily be transplanted to widely separated parts of the body, as, for example, the suprarenal, ovary, subperitoneal tissue, muscle, and subcutaneous fascia of the neck, chest and abdomen. If a sufficient amount of the main gland is removed, under appropriate conditions a compensatory hyperplasia of the remaining stump will ensue; and, in addition, a simultaneous and similar degree of hyperplasia of any transplants may occur independent of their location.

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[1] The Nerve Control of the Thyroid Gland, editorial, THE JOURNAL A. M. A., July 25, 1914, p. 325.

When very small doses of some iodin-containing substance are given, whether by mouth or by cutaneous applications of tincture of iodin, for example, involution of the thyroidal tissue promptly ensues in from two to three weeks. The change affects the transplants, irrespective of their location, in the same way as the main thyroid stump is affected. These facts are due to the investigations of Manley and Marine[2] of the H. K. Cushing Laboratory of Experimental Medicine at the Western Reserve University in Cleveland. If iodin, which protects against thyroidal hyperplasia, is administered prior to or at the time of transplantation, no hyperplasia of either the original gland or transplants occurs until the effect of the iodin has fallen to the level of inducing an insufficiency. Likewise, if iodin is administered following transplantation, no hyperplasia ordinarily occurs during the time of such administration.

But this is not all. If a large part of the transplanted thyroid tissue and of the original gland, thus involuted, is removed, the *remaining transplants and the remaining portion of the stump undergo active hyperplasia for the second time.* In evidence of the fact that the transplanted thyroid tissue actually can function, Manley and Marine have observed marked amelioration of the symptoms of operative myxedema associated with active hyperplasia of subcutaneous abdominal transplants in animals.

When thyroid tissue can "take" and grow in widely different parts of the body, when the transplanted tissue can undergo hyperplasia simultaneously with the original stump and in a form histologically identical with it, when a drug like iodin can affect these surgically disconnected fragments in the same way and at the same time, an explanation of these phenomena based on a theory of nervous control does not appear to be tenable. The Cleveland investigators believe that the thyroid may function as a true blood-vascular gland in that the stimuli which cause these hyperplasias may reach the gland cells through the blood stream, and that influences causing thyroid involution may be transmitted by the same means.

It would be illogical, indeed, to draw the conclusion, from what has been said, that specific secretory fibers to the thyroid glands do not exist. The new observations just cited do not directly touch this question. They clearly demonstrate, however, as Manley and Marine point out, that secretory fibers are not essential in order that the thyroid tissue may exhibit the characteristic morphologic and physiologic changes known to be associated with great variations in functional activity.

ENGLISH AND GERMAN MEDICAL EDUCATION

On another page[1] we reproduce in abstract a recent article by Mr. Flexner on "The English Side of Medical Education." It is really a comparison of the English with the German system of medical education. It is evident that neither system should be copied in its entirety in the efforts made to develop medical education. In Germany the teaching of the laboratory sciences has reached perhaps its highest stage of development, and the method of selecting teachers for both laboratory and clinical departments is on the basis of scientific eminence. In these respects the German method would be more worthy of adoption in this country. According to Mr. Flexner, however, the German system of medical education is weak in that the lecture still constitutes the backbone of the instruction furnished and, in fact, is largely the bulk of the instruction. Again, in the medical course the student is still a mere onlooker and does not have free admission to the patients at the bedside. The German course, therefore, is excellent in the development of research workers, but the practical benefit is lost by the failure to allow the student to make use of the knowledge obtained in the laboratory departments in first-hand study and treatment of patients. From other sources meanwhile, it is evident that even during the required intern year his freedom in the hospital is seriously limited.

The weaknesses of the English system, on the contrary, correspond almost entirely to the points which are strong in the German system. In England secondary education has not been so thoroughly developed as in Germany; hence the student is not as well qualified to enter on the study of the so-called laboratory sciences. Meanwhile, these laboratory sciences, with the exception of physiology, are not well developed in the English medical school. Only elementary instruction in anatomy is provided for; pathology is taught only from the gross and descriptive points of view; modern pharmacology is almost unrecognized, and adequate provision for scientific research is almost entirely lacking. For this reason clinical teachers are rarely men of scientific vision or enthusiasm, and are unable to impart the spirit of scientific research to their students.

The method of appointing members of the faculty in England is at fault, since it depends on seniority. There is also considerable inbreeding. Younger men, usually recent graduates of the institution, are appointed to the lesser positions in the hospitals, and promotion depends not on productivity so much as on merely a faithful performance of routine duties. If they stay in the hospital, they are bound in time to reach the higher positions.

The strength of the English system lies in the fact that from the beginning the student has free access to the hospital, where, as a clinical clerk, he has free entry to the bedside of patients. This not only gives him his opportunity to observe facts of diagnosis and treatment, but also it is his duty to assist in the examination and care of patients. As Mr. Flexner says, "he observes his master at work; he is permitted to examine the patient, to confirm or to disprove his master's observations and, subject to his master's control, to go through all the motions involved in the practice of medicine." Cases are assigned to the students or clerks in rotation, each clerk being required to make a complete history and description of each of his cases, including the requisite microscopic examinations. "This method," says Mr. Flexner, "fulfils every requirement of sound teaching; the student is at first hand familiar with the patient; he is compelled to observe and to think; he notes and reports progress from day to day; he sees his master on trial as the procedure followed is either vindicated or discredited by the developments."

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[2] Manley, O. T., and Marine, D.: Studies in Thyroid Transplantation, I, Data Relative to the Problem of Secretory Nerves, Proc. Soc. for Exper. Biol. and Med., 1915, xii, 202.

[1] The English Side of Medical Education, The Journal A. M. A., this issue, p. 1391.

It would seem, therefore, that for the highest development of medical education, the medical school should adopt the German method of selecting teachers on the basis of attainments and combine this with the clinical clerk system of hospital teaching as employed by the English schools. Of course, every college needs adequate funds for the employment of full-time teachers, for the adequate equipment of its laboratories, and for the development of medical research. The most useful medical school is not the one which merely passes on the theoretical medical knowledge of former generations, but the one which also, through research, adds to the knowledge of the etiology, diagnosis and treatment of diseases and, through its hospital, and the thoroughly trained physicians graduated each year, gives the public the benefit of this knowledge.

THE DISTRIBUTION OF THE BLOOD IN SHOCK

It almost requires courage to venture on any added discussion of the subject of shock. A multiplicity of more or less isolated facts pertaining to shock have been woven into the fabrics of belief of varied kinds. One of the incentives for increasing the variety and number of hypotheses in regard to shock lies in the eminently practical aspects of the problems that they encompass. A really tenable explanation of shock would find prompt service in the routine of the practitioner. The secretary of commerce recently remarked, in an address entitled "First Get the Facts,"[1] that "the truth of yesterday is not that of today. The truth of today is but the parent of that which is to be tomorrow. . . . Where prejudice is, truth is so far excluded, for no judgment given in advance of known truth is either sound or safe." Therefore it is essential in any progressive vocation that "the sight, whether it be far or near, shall know a fact when it sees it and be ready to abandon a pseudo fact for a real one and to abide by the latter till further facts are found."

The foregoing must serve as the excuse, if such is needed, for reverting to new facts in regard to the distribution of the blood in shock. It is evidently the disturbance in the normal distribution of the circulating fluid of the body that constitutes an essential factor in shock. Janeway and Jackson[2] of the University and Bellevue Hospital Medical College, New York, have adopted for their experimental studies that form of shock which is produced by mechanical means, because, under these conditions, fewer extraneous factors enter into the consequences of the primary disturbance of the normal distribution of the blood. It consists in a controllable partial occlusion of the vena cava inferior in the chest, whereby the amount of blood passing from the veins to the arterial side of the circulation can be accurately controlled, and, in consequence, the blood pressure regulated. The observations made in this way on the altered volume of various visceral organs as the result of induced changes in the blood supply lend emphasis to the importance of what Yandell Henderson has described as the venopressor mechanism, and they confirm its failure in shock.[3]

Through the inability of the blood in the inferior vena cava to discharge adequately into the heart, there results a mechanical distention and increased intravascular pressure in the capillaries and small venules of the regions draining into this vessel. After release of the experimental obstruction, the arterial pressure, which has previously been low, may return for a time to a comparatively high level. According to Janeway and Jackson, the crucial factor concerns a progressive fall in the arterial pressure: after the relief of the obstruction to the flow through the inferior vena cava, there occurs, even after a more or less complete restoration of the arterial blood pressure, a progressive fall until death. This, they assert, can be the consequence only of some change in the walls of the vessels primarily affected by the occlusion of the inferior vena cava, namely, the capillaries and small venules. On this basis, then, in mechanically induced shock, a mechanical distention of a certain degree and persistence is liable to cause an alteration in some normal property of the capillaries — of their tone — as the result of which they lose the power of emptying the increased quantity of contained blood through the heart into the arterial side of the circulation. This power is retained, however, after shorter periods of overdistention or distention of lesser degree.

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[1] Redfield, W. C.: First Get the Facts, Science, July 9, 1915, p. 39.

[2] Janeway, H. H., and Jackson, H. C.: The Distribution of the Blood in Shock, Proc. Soc. Exper. Biol. and Med., 1915, xii, 193.

[3] Some Conditions Inducing Excessive Respiration, editorial, The Journal A. M. A., June 13, 1914, p. 1897; The Vasomotor Center in Shock, Current Comment, May 8, 1915, p. 1588.

Overdistention of the capillaries may result in various ways: By obstruction to the venous return to the heart there may be a draining back of blood within the capillaries, or in other forms of shock there may be sudden discharge of blood at high pressure into the capillaries. It seems to be a fact that in any case the normal quota on the arterial side of the circulation is diminished. Even after the original cause of the disturbed distribution of the blood, whether mechanical, toxic or inhibitory in nature, is removed, the circulatory condition may persist; and in fatal cases the abnormal diminution of the blood apparently progresses from local peripheral causes alone until death occurs. Janeway and Jackson express the abnormality by saying that shock consists in a general displacement of what may be termed a critical quantity of blood from the arterial to the capillary and venous side of the circulation, a displacement which is therefore accompanied by comparatively insignificant volumetric changes, and dependent largely on a loss of existing tone in the walls of the small venules and capillaries.

THE SOY BEAN, ITS ENZYMES AND CARBOHYDRATES

The soy bean (*Glycine hispida*) is an annual leguminous plant, a native of southeastern Asia. In Japan and China, where it has been grown from time immemorial, it is used for human food and is an important crop in many provinces.[1] Over two hundred varieties of the bean are reported, and many and varied kinds of food are made from it. Though known in Europe since the latter part of the eighteenth century, and in the United States since 1829, it long remained a botanic curiosity in both places. It was introduced into the United States on the return of the Perry expedition from Japan in 1853. For more than twenty-five years it has been under investigation by the U. S. Department of Agriculture and by some of the state agricultural departments, and is just now beginning to take a place as a farm crop. The North Carolina Experiment Station recommends soy beans as a palatable vegetable, but their use has not become general; they are used in this country chiefly as forage plants, for ensilage and to enrich the soil.

Recently the soy bean has achieved some degree of medical prominence because of two characteristics: It contains several enzymes, one of which, urease, decomposes urea into ammonia and carbon dioxid. This enzyme is therefore used to determine the amount of urea in the urine, the blood and other body fluids.[2] Also, being very rich in protein and fat and containing only traces of starch, soy bean products have been recommended as foods for diabetics.[3] In combination with condensed milk and barley flour, their use has been advised in the form of a gruel for infant feeding in cases in which fresh milk cannot be obtained or the milk supply is questionable. They have been recommended in certain cases of inability to digest cow's milk and of temporary intestinal derangement.[4]

Although the soy bean is almost completely free from starch, it contains about 20 or 25 per cent. of nitrogen-free extract (total carbohydrates) which, until recently, had not been thoroughly studied. Since starch is not the only carbohydrate injurious to diabetics, it is desirable that the identity, amounts and percentages of the various carbohydrates in the bean should be worked out. Street and Bailey[5] of the analytical laboratory of the Connecticut Experiment Station, present analyses of several varieties of soy beans which have been grown on the experiment station farm. The average percentages are: water 10, ash 5.54, protein 38.29, fiber 4.64, nitrogen-free extract (total carbohydrates) 26.64 and fat 14.89. The average percentages from similar analyses of several commercial soy bean flours are: water 5.1, ash 4.5, protein 42.5, fiber 3.7, nitrogen-free extract 24.3 and fat 19.9. The greater proportion of protein and fat in the commercial flour is attributed by Street and Bailey to loss of the other ingredients through bolting and other purifying manufacturing processes. The constituents of the nitrogen-free extract were especially studied for a single variety of the beans grown on the experiment station farm. The results in percentage are: total sugars 4.51, starch 0.50, dextrin 3.14, pentosan 4.94, galactan 4.86 (less 0.24 due to raffinose), cellulose 3.29, organic acids 1.44 and waxes, color principles, etc., 8.60. Street and Bailey remark that, of these constituents, only the first three—the sugars, starch and dextrin—amounting to 8.15 per cent., may be considered objectionable in a strict diabetic diet. "The remaining nitrogen-free extract, 22.93 per cent., about three fourths of the whole, consists of . . . forms which are not generally considered a source of danger in a diabetic diet."

These investigators also studied the enzymes of the soy bean, finding a protease of the peptoclastic type, a peroxidase and a lipase in addition to the urease, amylase and glucosid-splitting enzyme previously reported. Sucrase and protease of the peptonizing type were not found. Owing to the wide distribution of enzymes in vegetable tissues and the ease with which they can usually be detected, less importance is attached by the authors to this section of their report.

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[1] Piper, C. V., and Nielsen, H. T.: Soy Beans, Farmer's Bull, 372, U. S. Dept. Agric., 1909. Ball, Carleton R.: Soy Bean Varieties, Bur. Plant Ind. 98, U. S. Dept. Agric., 1907.

[2] Two urease preparations (arlco-urease and urease-Dunning) have been admitted into New and Nonofficial Remedies (N. N. R., 1915, p. 362).

[3] See for instance Friedenwald and Ruhräh (The Use of the Soy Bean as a Food in Diabetes, Am. Jour. Med. Sc., December, 1910, p. 793). Diabetic foods (hepco flour, hepco dodgers, and hepco grits) made from the soy bean have been admitted into New and Nonofficial Remedies (N. N. R., 1915, p. 193).

[4] Ruhräh, John: The Soy Bean and Condensed Milk in Infant Feeding, Am. Jour. Med. Sc., October, 1915, p. 502.

[5] Street, J. P., and Bailey, E. M.: The Carbohydrates and the Enzymes of the Soy Bean, Jour. Indust. and Engin. Chem., October 1915, p. 853.

The chief interest of their work naturally centers in the carbohydrate analyses.

An interesting point is the suggestion that differences in starch content of the beans found by various investigators are probably due to differences in ripeness, or rather to differences in the circumstances under which they are allowed to ripen. "Harz found that, when the beans do not ripen thoroughly, or when they are allowed to ripen after the vines are cut, starch may be present, certain varieties being more likely to contain it than others, whereas if the beans are thoroughly ripened they are practically free from starch." In this connection it should be noted that Street and Bailey do not state whether or not the beans which they analyzed were hulled. Ruhräh[4] lays stress on the importance of the removal of the skins or "coarse fibrous hulls which contain little protein in the preparation of soy beans for diabetic or infant food." In any case, it is satisfactory to know that the total amount of sugar-forming carbohydrates contained in soy beans falls well within the limit of 10 per cent. regarded as safe for diabetics.

Current Comment

"AT THE BAR OF PUBLIC OPINION"

When the medical profession gives the public facts regarding the fraudulence and dangers connected with the exploitation of "patent medicines," the "patent medicine" manufacturer has a stock retort ever ready: "The doctors are opposed to 'patent medicine' because it hurts their business; because 'patent medicines' cut into the income of the medical profession." Few excuses ever rested on a less substantial basis. Considered from the financial standpoint only, the fraudulent "patent medicine" business is the physician's greatest boon. Far from curtailing his income, the advertising and selling of fraudulent "patent medicines" greatly augment it. Every lurid "patent medicine" advertisement that frightens the healthy into the belief that they are ill sends four of such people to the doctor to one that it sends to the "patent medicine" counter. No small proportion of the physicians' patients are those who, neglectful of disease in its early stages, and believing the claims made for fraudulent "patent medicines," have placed their dependence on these products until they have reached a condition where prolonged medical attention is imperative. For years most newspapers and many magazines have been under the blighting influence of the profits of quackery. But a change is taking place and many newspapers and magazines of the better class are now outspoken in their denunciation of the cruelty and fraud that seem to be inseparable from the exploitation of "patent medicines." The Propaganda department of The Journal has collected some editorial opinions on the "patent medicine" business and quackery from newspapers and magazines and reprinted them in pamphlet form.[1] These editorial excerpts are from publications that not only have no possible connection with the medical profession but could, if they would, be beneficiaries of the "patent medicine" industry: they are criticisms of a business that, as the price of silence, would willingly give fat advertising contracts to the publications that have voiced them.

AMINO-ACIDS AND TUMOR TISSUE

The importance of certain amino-acids for the functions of growth has been emphasized by the recent work of Osborne and Mendel[2] and other investigators. When the proteins furnished in the diet are deficient in the amino-acids lysin and tryptophan, for example, growth is halted. These derivatives evidently cannot be synthesized by the animal organism; so that when they are lacking the protein structure of newly formed tissues cannot be built up. When the missing amino-acids are supplied either as such or in the form of proteins yielding them, youthful tissues can resume their growth. In contrast with normal tissues, malignant tumors are characterized by an exceptional tendency to grow. This fact, in connection with the features cited above, has raised the question whether or not these pathologic tissues show any unique composition with respect to the amino-acid "building stones" which enter into them. The chemical analyses of tumor tissue recorded up to date have been all but encouraging so far as any light thrown on the tumor problem is concerned. They have been fragmentary and inadequate in respect to both methods and results. There are, however, a few amino-acids which can be estimated at the present time with some approach to accuracy. The list includes arginin, histidin and lysin. This has encouraged Kocher to attempt a new comparison of the content of normal somatic and tumor tissue of man in respect to the amino-acids just mentioned.[3] Their quantity was found in five cases of malignant neoplasm to be approximately double that found in normal tissue. Whether such high percentages of these important amino-acids is a peculiarity of tumors or whether a corresponding increase will be found in normal rapidly growing tissue is a problem now under investigation. Kocher believes, however, that his results suggest a new approach to the study of the cancer problem, especially as it relates to metabolism. He recalls the evidence offered by Sweet, Rous and others[4] that when white rats having carcinoma are fed on a diet deficient in these basic amino-acids the tendency to metastasize is frequently diminished. Sometimes the tumors grow rapidly in these experimental cases, but there is a correspondingly rapid emaciation of the body. This fact, says Kocher, may indicate that the somatic tissue in such instances is broken down to furnish the required amino-acid to the rapidly growing tumor cells.

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[1] This pamphlet, entitled "At the Bar of Public Opinion," will be sent on receipt of a two-cent stamp.

[2] Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1912, xii, 473; 1912-13, xiii, 233; 1914, xvii, 325; 1915, xxii, 241.

[3] Kocher, R. A.: The Hexone Bases of Malignant Tumors, Jour. Biol. Chem., 1915, xxii, 295.

[4] Sweet, J. E.; Corson-White, Ellen P., and Saxon, G. J.: Jour. Biol. Chem., 1913, xv, 181. Rous, P.: Bull. Johns Hopkins Hosp., 1915, xxvi, 146.

THE SELECTIVE ACTIVITY OF THE KIDNEY

A comparison of the composition of the urine from each of the two kidneys after damage to one of them might be expected to reveal evidence regarding the possible selective power of the renal cells in relation to waste products. The modern blood analysis has already furnished facts to indicate that under pathologic conditions the kidneys may not be equally "permeable" or "impermeable" to all of the usual urinary components. Accordingly the "retention" of one or another of the familiar excretory products is announced and the expressions "salt retention," "nitrogen retention," etc. have come into use. They are indicative, without being conclusive, of a possible specific functional deterioration of the kidneys. Folin and Denis[1] have obtained complete and simultaneous collections of urine from each kidney, for reasonably long periods, after damage to one of these organs. The patients had been operated on for malignant growths in the bladder, so that a double ureterostomy rendered possible the collection of "single kidney" urines. In each case one or both kidneys had been infected and in addition somewhat damaged by the pressure of the bladder tumor on the ureteral opening. The hydronephrosis resulting from such back pressure is currently believed to injure the convoluted tubules rather than the glomeruli. The comparative analyses of a limited number of cases show that the damage produced by moderate hydronephrosis complicated by pyelitis is not particularly uniform in character so far as the excretory power of the kidneys is concerned. Comparisons of chlorid and nitrogenous excretion show that the capacity to eliminate nitrogenous substances is more easily or more frequently damaged than is the salt excretion. Indications of more detailed selective injury are seen in the lack of correspondence between the variations in phosphate and chlorid excretion. The output of creatinin and uric acid likewise did not vary together. A new conception is indicated by these unique clinical experiments. Without generalizing too minutely on the basis of the still limited data, Folin and Denis believe that their figures agree with the view that the excretion of urine by the kidney can be subdivided into an unknown number of more or less independent excretions. This is in harmony with other established physiologic facts regarding renal excretion.

MUSCULAR TISSUE IN THE AURICULOVENTRICULAR VALVES

Stanley Kent[2] has recently described muscular tissue, in the valve segments of the hearts of mammals, where its existence has hitherto apparently not been generally recognized. The muscle is striated, of a character similar to that forming the walls of the heart's chambers, and is continuous with the contractile tissue of the auricular wall. The muscular tissue may penetrate the valve flap to a considerable distance, and there is reason to suppose that this valvular muscle contracts in sympathy with the auricle and as a direct result of impulses derived from it. It is likely, as Kent suggests, that muscle in the situation described and with the connections referred to may exercise an important function in connection with the closure of the auriculoventricular valves of the heart.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Sanatorium Act Repealed.—The act of 1911 establishing a state sanatorium for tuberculosis has been repealed by the senate. The original act appropriated $40,000 for this purpose, and of this, $16,000 was spent for the purchase of a site in Cullman County, but the property has never been improved and no step has been taken for the erection of a building.

Plague Bill Passed.—The bill introduced by Senator Hartwell carrying a conditional appropriation of $10,000 to prevent the introduction of bubonic plague into Alabama through the port of Mobile or through any other avenue, has been passed by the senate by a vote of 13 to 8. It was explained that the funds are to be made available, if necessary, and in that case are to be handled by the State Board of Health with the approval of the governor.

Personal.—Drs. J. Alston Maxwell and Herbert Patton have been appointed surgeons for the student body of the University of Alabama, Tuscaloosa.——Dr. Tucker H. Frazer has been appointed dean of the Mobile School of Medicine of the University of Alabama, succeeding Dr. Eugene D. Bondurant, resigned, on account of ill health.——Dr. William M. Hestle, Buena Vista, was operated on recently in Baltimore for the removal of a growth from the lip, and has returned home.——Dr. Benjamin J. Baldwin, Montgomery, lost $5,000 as the result of a fire which destroyed his buildings, September 30.

CALIFORNIA

Health Department Moves.—The health department of Los Angeles has moved its headquarters from the City Hall to the Normal Hill Center.

Refuse to Rescind Isolation Regulation.—The board of supervisors of San Francisco, by a vote of 15 to 1, turned down the petition of the Parents' Rights League to take action to nullify the power of the local health board to isolate diphtheria carriers.

Prevention of Blindness.—The Jones bill for the prevention of blindness was passed by the legislature and became a law in June, 1915. The act gives the definition of ophthalmia neonatorum, requires that cases of this disease shall be reported within twenty-four hours, and provides that certain measures of prevention shall be taken by the local health officer and the State Board of Health. The new vital statistics law provides in the birth certificate a query whether the prophylactic for ophthalmia neonatorum was used.

GEORGIA

Prison Hospital Opened.—The hospital annex to the Federal Penitentiary, Atlanta, was opened September 29. The institution will accommodate 150 patients, and will be in charge of the surgeon-in-chief, assisted by professional men who are serving sentences in the Federal Penitentiary.

Urologists and Dermatologists Organize.—The Atlanta Urological and Dermatological Society was organized September 9, with an initial membership of twelve. Dr. Bernard Wolff was elected president; Dr. William L. Champion, vice president, and Dr. Omer F. Elder, secretary-treasurer.

Home for Crippled Children Opened.—The Home for Crippled Children established by the Scottish Rite Masons of

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[1] Folin, O., and Denis, W.: Some Observations on the Selective Activity of the Human Kidney, Jour. Biol. Chem., 1915, xxii, 321.

[2] Kent, A. F. S.: Illustrations of Muscular Tissue in the Auriculo-Ventricular Valves of the Mammal's Heart, Proc. Physiol. Soc., Jour. Physiol., 1915, xlix, p. xxxix.

Atlanta was formally opened, September 23, with fourteen inmates. The institution has two cottages in charge of a physician and nurse. The home is capable of accommodating twenty patients.

Medical Society Organized.—At a meeting of the physicians of Marion County held at Buena Vista recently, the Marion County Medical Association was organized with the following officers: president, Dr. Wesley Jefferson, Buena Vista; vice president, Dr. S. A. Murray, Tazewell; and secretary-treasurer, Dr. A. H. Drane, Buena Vista.

Personal.—Dr. and Mrs. Dean F. Winn, Atlanta, have returned from Russia. Dr. Winn was given the rank of lieutenant colonel in the Russian service on account of work done in the American Red Cross Hospital at Kiev.——Dr. Mather M. McCord, Rome, has been elected health commissioner of Floyd County and will assume office in January.——Drs. William P. Harbin and James C. Watts have been elected members of the board of trustees for the General Hospital to be established by Rome and Floyd County.

State Medical College Scholarships.—Scholarships in the medical department of the University of Georgia, Augusta, have been awarded by Governor Harris to the following applicants subject to the required examination: First district, S. H. Titshaw, Lyons; second district, R. W. Wimberly, Fort Gaines, and W. J. Ford, Sylvester; fourth district, Dr. W. E. Thomason, Texas; R. T. Park, Newnan, and Lee Reeves, Carrollton; eighth district, Jones Weems, Eaton, and Lamar Craft, Elberton; ninth district, Hoke S. Cantrell, Cornelia, and H. C. Chilson, Alpharetta; eleventh district, Lamar Harris, Wrightsville.

ILLINOIS

State Hospital Staffs to Meet at Elgin.—The State Hospitals' Medical Association of the State Hospitals of Illinois announces that its next meeting will be held at the Elgin State Hospital, October 28 and 29.

Personal.—Dr. George A. Zeller, Springfield, has been appointed alienist of the State Board of Administration.——Dr. and Mrs. Frederick E. Tulley, Granite City, have returned after a summer spent on the Pacific Coast.—Dr. William H. Maley, Galesburg, was painfully injured by the overturning of his automobile south of Maquon, October 3.

Joliet Hospital Must Enlarge.—The Will County Medical Society gave a dinner, September 23, in honor of the board of directors of the Silver Cross Hospital, Joliet, at which Dr. Frederick W. Werner presided. A maternity wing is urgently needed for the hospital, and plans have been made and approved for this addition. It was shown that the hospital had on hand about $30,000 to apply on the building fund. This leaves $45,000 to be secured in addition, and a committee was appointed to take up this matter.

Charity Conference.—The twentieth State Conference of Charities and Correction will be held in Danville, October 23 to 26, under the presidency of Dr. George T. Palmer, Springfield. The first day of the conference will be devoted to public health, nursing, visiting nurses, antituberculosis, etc., under the auspices of the Illinois Association for the Prevention of Tuberculosis.——The Illinois Association of County Home Superintendents and Illinois Probation Officers Association will hold their annual sessions in Danville, October 22 and 23.

Chicago

To Raise Money for Hospital in China.—Dr. Hie Ding Lin, an intern at Mary Thompson Hospital, made an appeal before the Women's Association of Commerce, September 30, to raise money for a free hospital for women and children at Foo Chow, China.

Tuberculosis Society Meeting.—The sixteenth meeting of the Robert Koch Society for the Study of Tuberculosis will be held at noon, October 18, at the City Club. On this occasion Dr. Francis M. Pottenger, Monrovia, Calif., will speak on "The Diagnosis of Tuberculosis by Palpation."

Physician's Wife Dies.—The sympathy of the members of the medical profession of Chicago goes out to Dr. Robert B. Preble in the sad affliction that has fallen on him. On October 6, through a fire that started in his house, Mrs. Preble and her mother were burned so that the latter died immediately and the former within a few hours.

Personal.—Dr. G. French S. Cary was severely injured last month while on a motor trip with his wife and baby near McCool, Ind., when the car went over a bank into a pool of water 18 feet deep.——Dr. and Mrs. Charles Adams have returned to Chicago after an absence of two years in Hawaii, the West Indies and Central America.——Dr. Reinhard Rembe is reported to have been decorated with the Iron Cross by the German emperor. Dr. Rembe has been in service with the German army since the outbreak of the war.——Dr. and Mrs. Arnold C. Klebbs, Switzerland, will spend the winter in Washington, D. C.——Dr. William S. White was operated on at the Evanston Hospital, October 8, for appendicitis and the removal of gallstones, and is reported to be improving.

MARYLAND

Typhoid in Baltimore.—During September, 189 new cases of typhoid fever were reported, with twenty-two deaths. During September, 1914, 130 cases occurred.

The Fight Against Malaria.—Senior Surg. Henry R. Carter, U. S. P. H. S., in charge of the Marine Hospital at Baltimore, has been detailed by Surgeon-General Blue to cooperate with the State Board of Health in stamping out malaria in Virginia.

Suits Decided in Favor of Physician.—Suits aggregating $15,000, brought against Dr. Alexander E. Muse, in which damages were claimed for injuries alleged to have been sustained by a 3-year-old boy who was struck by an automobile belonging to Dr. Muse, were decided in favor of the physician, October 1, as the fact was established that the automobile was being driven by a colored man without permission from Dr. Muse.

Physicians Form Civic Club.—At a meeting of physicians recently held at the Medical Library, a movement was started for the organizing of the Physicians' Civic Club, the object being to familiarize physicians with the city government and other subjects of interest to them. Dr. William T. Watson was elected temporary chairman and Dr. Frederic V. Bietler temporary secretary. The chairman was authorized to appoint a committee to draft a constitution and by-laws and another to nominate officers.

Personal.—Dr. William F. Lockwood, formerly dean of the College of Physicians and Surgeons, has been chosen dean of the School of Medicine of the University of Maryland to fill the vacancy caused by the death of Dr. R. Dorsey Coale. Dr. Lockwood is professor of medicine in the university and is a graduate of that school. Dr. Arthur M. Shipley, Baltimore, who has been acting dean since Dr. Coale's death, refused the deanship.——Dr. B. Merrill Hopkinson, professor of oral hygiene in the University of Maryland, delivered the introductory address to the students of the several classes, October 4.——Dr. John D. Blake, commissioner of health, has announced the appointment of Dr. William Travis Howard, Jr., as assistant commissioner, in place of Dr. C. Hampson Jones, Baltimore, and Dr. Austin H. Wood as secretary to the department.——Dr. Nathan R. Gorter, former health commissioner of Baltimore, has qualified as a member of the State Board of Health, to which he was appointed by the governor soon after his successor as health commissioner was named by the mayor.——Dr. Mary R. Fleming, a medical missionary of the Presbyterian Church, has arrived at Tabriz, Persia. She is a graduate of the Johns Hopkins Medical School, and at Tabriz will be physician and surgeon in charge of the hospital for women.

MASSACHUSETTS

Must Not Wrap Food in Newspapers.—Dr. Francis X. Mahoney, health commissioner of Boston, has issued an order to storekeepers prohibiting the use of unclean wrappers for food.

Ether Day.—The sixty-ninth anniversary of Ether Day was celebrated at the Massachusetts General Hospital, October 16. The exercises were held in the lower amphitheater in the outpatient department, and Dr. William Williams Keen, Philadelphia, delivered the address.

Course in Medicine and Pathology.—A course in medicine and pathology is to be given during October and November in the Pathological Amphitheater of the Massachusetts General Hospital by Dr. William H. Smith, visiting physician, and Dr. Oscar Richardson, assistant pathologist of the institution. The course will be given on Wednesday from 3:15 to 5:15 p. m.; is open to graduates of medicine and to third and fourth year students.

Personal.—Dr. Michael F. Fallon, Worcester, has been appointed a member of the Board of Registration in Medicine.——Dr. Alura A. C. Hughes, Boston, has been appointed medical inspector in charge of the nurses in the child hygiene division of the health department.——Dr. Benjamin H. Metcalf, Winthrop, has recently completed a tour by automobile to the Pacific Coast and return, a continuous journey of about 10,000 miles.——Dr. Edward C. Briggs, Boston, has resigned as professor of materia medica and therapeutics in Harvard Medical School and has been made professor emeritus.

MICHIGAN

Higher Entrance Requirements.—An official report states that beginning in the fall of 1916 the entrance requirements of the University of Michigan, Homeopathic Medical School, will be raised to two years of collegiate work. This makes forty-six medical colleges which in 1916 will have put into effect for admission the requirement of two or more years of collegiate work.

Personal.—Dr. Marinus L. Holm, Lansing, formerly state bacteriologist, but recently placed in charge of the branch laboratory of the State Board of Health at Houghton, has resigned and will practice in Lansing.——Dr. Albert F. Stone, Bay City, injured his left hand in the gear of his automobile September 30, necessitating the amputation of the first and third fingers.——Dr. Christopher G. Parnall, Jackson, has been appointed district medical inspector for Jackson and Lanawee County.——Dr. Arthur E. Ames, Morrice, was seriously injured by the overturning of his car in a collision with another automobile recently.——Dr. Morton Gallagher, Bay City, is reported to be seriously ill following an attack of sciatica.

MINNESOTA

New Medical Building.—The new twelve-story building to be erected on Seventh Street, Minneapolis, for the use of physicians at a cost of more than $300,000, is to be commenced this month.

Emergency Ambulance Service.—An emergency ambulance association is being formed among the physicians of Duluth. The object of the organization is to place in service an automobile ambulance. Dr. William A. Coventry, Duluth, is in charge of the project.

Hospital Notes.—Dr. Giles R. Pease, Redwood Falls, expects to open his new hospital in that city this month.——Dr. Fletcher W. Powers has added a two-story porch and sun parlor to his hospital building in Barrett and has renovated the entire building.

New State Officials.—At the annual meeting of the Minnesota State Medical Association in Rochester, September 29 to October 1, the following officers were elected: president, Dr. J. Warren Little, Minneapolis; vice presidents, Drs. John J. Donovan, Litchfield; Arthur C. Rogers, Faribault, and Charles O. Wright, Luverne; secretary, Dr. Thomas S. McDavitt, St. Paul (reelected); treasurer, Dr. Earle R. Hare, Minneapolis; and councilors, Drs. Richard J. Hill, Minneapolis, fourth district, and Franklin A. Dodge, LeSueur, seventh district.

Personal.—Dr. William A. Bessesen, Albert Lea, suffered a loss of $4,000 in the destruction of his building by fire, September 28.——Drs. Herman W. Froehlich, Harvey G. Hieber, Francis Gambell, Jesse E. Douglass and Oscar F. Mellby, Thief River Falls, were the guests of honor at a dinner given by the local commercial club, September 24, as an appreciation of the work done by the physicians in establishing the new hospital at Thief River Falls.——Dr. Andrien J. Kirghis, St. Cloud, has started for France and expects to enter the French medical service.

MISSOURI

St. Louis

Personal.—Dr. Frederick Hagler has returned from abroad where he has spent several months in the service of the Red Cross.

Reduction of Feebleminded in Schools.—Dr. J. E. Wallace Wallin, director of the psycho-educational clinic of the St. Louis public schools, in his first annual report, shows a decrease of nearly 25 per cent. in the number of children listed as feebleminded, as compared with last year. When Dr. Wallin took charge of the clinic, 468 pupils were receiving instruction in special schools for the feebleminded. By classifying these children he has reduced the number of pupils in special schools to 372. Of the total number of children examined by him, 7 per cent. proved normal; 12 per cent. showed evidence of retarded intellect; 33 per cent. were listed as backward; 11 per cent. were on the borderline between backwardness and the first state of feeblemindedness; 15 per cent. were morons; 14 per cent. imbeciles, and 1 per cent. idiots. Of the entire number, 20 per cent. had speech defects.

MONTANA

School Inspection.—The members of the Gallatin County Medical Society have again secured the inspection of the Baker Creek school district. This is the only rural school in the state under inspection.

Personal.—Dr. Edward M. Gans has been elected mayor and president of the Commercial Club of Judith Gap.——Drs. James F. Blair and Joseph H. Delaney, Bozeman, toured Yellowstone Park by automobile during September.——Dr. James F. Blair, Bozeman, has gone east for postgraduate work and the surgical congress.——Dr. Herbert H. Judd, Bozeman, spent his vacation in an automobile tour of Glazier Park.——Dr. William C. Riddell, Helena, was in charge of the safety and health committee of the Montana State Fair, which was visited by 40,000 persons during the week.

NEW YORK

Personal.—Dr. Otto R. Eichel has been appointed by Dr. Biggs to the position of director of the division of sanitary supervisors of the State Department of Health.

Harvey Society Lectures.—The first lecture of the eleventh course of the Harvey Society will be delivered at the New York Academy of Medicine on October 16 at 8:30. At this time Prof. C. W. Stiles of the Hygienic Laboratory, Washington, D. C., will lecture on "Recent Studies on Schoolchildren with Special References to Hookworm Disease and Sanitation."

New York City

New Buildings for Randall's Island.—The aldermen have voted $650,000 in corporate stock for new buildings for the children's hospital and schools on Randall's Island and for the nurses' home on Blackwell's Island.

Pensions for Widowed Mothers.—The Board of Child Welfare which is to administer the Widowed Mothers' Pension Law has for the first time presented its budget for this city, and the board will ask $483,000 for the relief of widowed mothers and $36,000 for office expenses. Applications are in from 3,166 mothers who are estimated to have 9,204 children. These figures do not include 1,500 children who are now in institutions who might be returned to their mothers. Each case is to be investigated and passed on before 1916.

Health Department Will Aid in Diagnosis of Glanders.—The health department announces that it is prepared to test, free of cost, by the blood reaction for glanders, all horses in the greater city of New York. Horse owners are urged to take advantage of this facility by employing a competent veterinarian to collect a specimen of blood from each horse in their stable and to forward it to the department together with the number which is issued to the horse by the department of agriculture of the state. The department intends to have all horses in the city tested. If an owner indicates that he cannot have a specimen for examination collected by a private veterinarian the department will consider a request to have it done by a veterinarian in the employ of the city.

Physical Examination of Schoolchildren by Private Physicians.—The attention of all the physicians in the city has been called to that section of the sanitary code and to the regulations governing the physical examination of schoolchildren of the city of New York. It is the desire of the department of health to have all schoolchildren physically examined by their private physicians and to have the medical inspectors assigned to duty in the schools examine only those children whose parents are unable to afford the services of a private physician. The department announces that it counts on the cooperation of the medical profession and that prompt examination with the immediate return of the card, properly filled out, will greately facilitate the work of the Bureau of Child Hygiene. A copy of the card form together with the regulations of the board of health with respect to this examination is being sent to all physicians in the city.

The Interstate Commission to Fight Mosquitoes in 1916.—In order to avoid a repetition of this year's mosquito experience, Commissioner Goldwater proposes the formation of an interstate commission to fight mosquitoes in 1916. New York City was not alone in its suffering from mosquitoes during the past summer; the situation was no better in the neighboring states. The residents of the nearby states have a common interest in this matter with those of New York City. Furthermore, no permanent relief from the nuisance can be expected by New York, unless vigorous preventive measures are simultaneously prosecuted in Connecticut, New Jersey and Westchester County. For these reasons the formation of an interstate commission is proposed. It will be organized if Dr. Goldwater's plans are carried out at the end of this year. The U. S. Public Health Service has been invited to join and has been requested to nominate a chairman to direct the work of the commission.

OHIO

Portrait of Dr. Conner Presented.—An oil painting of the late Dr. Phineas S. Conner was presented to the Cincinnati General Hospital by Dr. Charles E. Caldwell, September 14.

Hospital Dedicated.—The Good Samaritan Hospital, recently completed at Clifton and Dyxsmith Avenue, Cincinnati, was dedicated with appropriate ceremonies, October 2. The buildings and equipment have cost thus far about $175,000, only one wing of the institution being completed. The plans call for a five-wing edifice, which will cost more than $300,000. The addresses on the occasion were delivered by Dr. Charles L. Bonifield, Cincinnati; Dr. Henry T. Sutton, Zanesville, a member of the State Board of Health, and Dr. Lewis S. McMurtry, Louisville, Ky.

Personal.—Dr. Philip D. Wilson, Columbus, has returned after a term of military hospital service in France.——Dr. John R. Johnson, for more than two and a half years superintendent of the district tuberculosis hospital at Lima, resigned, the resignation taking effect October 15. After a postgraduate course in New York City, he expects to return to Lima and enter practice.——Dr. Roger S. Morris has been appointed full-time professor on the staff of the Cincinnati General Hospital.——Dr. Rufus A. Van Voast, Cincinnati, has returned home after several months' hospital service with the French army.

Work on New Medical School Begins.—Dr. Christian R. Holmes, Cincinnati, announced September 27, that the work of grading the ground for the new medical school directly opposite the contagious group of buildings of the Cincinnati General Hospital had begun. The school will be ready for occupancy in about a year and a half. The cost of the buildings will be about half a million dollars and the institution will have accommodations for about 200 students.

Saturday Evening Free Lectures.—The following is the program of the Saturday evening free lectures before the B. Merrill Ricketts Experimental Surgical Research Laboratory for the season 1915-1916:

October 16—Dr. Mortimer Frank, Chicago. The History of Glands. (Illustrated.)

October 23—Dr. Frank Winders, Columbus. The Heart Comparative Anatomy. Function, Uses and Abuses. (Illustrated.)

October 30—Dr. Sydney E. McKee, Cincinnati. Two Years' Travel Around the World. Medical and Scenic. (Illustrated.)

November 6—Dr. Axel F. Werelius, Chicago. Surgery of the Heart, Lungs and Trachea. (Illustrated.)

November 13—Dr. Chas. T. Souther, Cincinnati. The Stomach Comparative Anatomy, Function and Surgical Aspects. (Illustrated.)

November 20—Dr. DeEnna D. DeNeen, Cincinnati. The Ureter Anatomy, Function and Restoration. (Illustrated.)

November 27—Dr. David I. Wolfstein, Cincinnati. The Cerebellum and Its Function. (Illustrated.)

December 4—Dr. Wm. E. Schenck, Cincinnati. Optical Instruments Construction and Uses. (Illustrated.)

December 11—Dr. William J. Thomasson, Newport, Ky. The Upper Air Passages and Tonsils. Comparative Anatomy and Diseases. (Illustrated.)

December 18—Dr. Sparrell S. Gale, Roanoke, Va., Chief Surg. N. & W. R. R. Safety First, How It Saves Life and Property. (Demonstrations.)

January 8—Prof. Chas T. P. Fennel, Cincinnati. Poisons and Narcotics (Mineral, Vegetable, Animal and Insect). (Illustrated.)

January 15—Dr. Willard D. Haines, Cincinnati. Cancer of the Stomach, Precancerous Condition and Surgical Aspects. (Illustrated.)

January 22—Dr. Joseph E. Pirrung, Cincinnati. Hare Lip and Cleft Palate. Their Embryology, Causes and Correction. (Illustrated.)

January 29—Dr. Chas. F. Hicks, Welch, W. Va. Six Hundred Gun Shot Wounds in Mining Practice. Conclusions. (Illustration of Muscles.)

February 5—Dr. Frank Warner, Columbus. A Study of the Relationship of Arteriosclerosis to Malignancy. (Illustrated.)

February 12—Dr. Wm. M. Doughty, Cincinnati, and Mr. J. R. Kelley (Kelley-Koett). The Roentgen Ray, Its Use and Abuse, Demonstratious and Development of Plates.

February 19—Dr. Hugh W. MacMillen, Cincinnati. Teeth, Their Comparative Anatomy, Uses, Care and Diseases. (Illustrated.)

February 26—Dr. Robert C. Heflebower, Cincinnati, Ohio. Comparative Study of the Eyes. (Continued.) (Illustrated.)

March 5—Dr. Wm. Seaman Bainbridge, New York City. To be announced.

March 12—Dr. Joseph A. Stucky, Lexington, Ky. Mountain Ophthalmia. Report to Kentucky State Investigating Commission as to Cause, Frequency and Cure. (Illustrated.)

March 19—Dr. Frank U. Swing, Cincinnati. Artificial Eyes and Lenses, Old and New. (Illustrated.)

March 26—Dr. Eben B. Shewman, Cincinnati. The Kidney, Its Anatomy with Reference to Its Function and Pathology. (Illustrated.)

April 3—Drs. Benjamin M. Ricketts, John H. Wilms and DeEnna D. DeNeen. Experiments and Demonstrations.

OKLAHOMA

New Hospital.—Dr. Henry A. Lile, Aline, is building a three-story fireproof hospital to cost about $10,000.

Laboratories Transferred.—The laboratories of the State Board of Health have been transferred from Norman to Guthrie.

Drug Addicts.—Dr. John W. Duke, Guthrie, state commissioner of health, is collecting data on the number of drug addicts in the state who are affected by the Harrison Act.

Personal.—Dr. William M. Cott, Okmulgee, has succeeded Dr. Virgil Berry, Henryetta, as health officer of Okmulgee County.——Dr. Percy A. Smithe, Enid, who joined the American Red Cross in Vienna shortly after the outbreak of the war, has returned to the United States.——Dr. Edward B. Mitchell, Lawton, has returned after a year in Florida.——Dr. William M. Taylor, Oklahoma City, is slowly recovering from the serious injuries sustained in a collision between his automobile and a passenger train.

PENNSYLVANIA

Personal.—Dr. Clinton T. Saylor, Rockwood, who was operated on recently at the Memorial Hospital, Johnstown, for appendicitis, is reported to be convalescent.

Hospital Cornerstone Laid.—The cornerstone of the hospital of the Masonic Home, Elizabethtown, was laid with impressive ceremonies, September 29. Gifts of $52,000 were announced for the hospital, which is being erected as a memorial by the Freemasons of Philadelphia, and is to consist of five buildings to cost altogether about $175,000.

Cannot Provide for Consumptives.—There are said to be 1,107 sufferers from tuberculosis in Pennsylvania on the waiting list of the three sanatoriums of the state. These sanatoriums at Mont Alto, Cresson and Amburg are overcrowded, and the State Board of Health cannot begin the erection of more buildings because of the cutting down of the appropriation for this purpose.——The 115 tuberculosis dispensaries scattered through the state treat on an average of 10,000 cases a day, and in addition a state nurse makes stated calls at the home of each of these patients.

Sixty Typhoid Cases at Shippensburg.—Sixty cases of typhoid fever and twenty-eight suspects were reported October 7 to the State Health Department from Shippensburg. Six health department engineers and nurses are now on the ground aiding the health authorities of the town. A temporary filter plant has been constructed, and an emergency hospital for the treatment of the more advanced cases established. The source of contagion has now been definitely located in the water supply of the town, which comes from springs on state forest reservation plots. The Cumberland Valley State Normal School has been affected, and four girls, two residing in Carlisle and two in Harrisburg, have been sent to their homes. Other cases are being treated in the school infirmary.

Philadelphia

Endowment for Medical College.—It was announced at the formal opening exercises of Hahnemann Medical College, September 27, that the institution would receive at least $50,000 as an endowment through the will of the late Dr. Edward R. Greggs of Pittsburgh.

Union Meeting of Pediatric Societies.—A joint meeting of the Philadelphia, New York and New England pediatric societies will be held in Philadelphia, November 8 and 9. A series of clinics is being arranged, and through the courtesy of the local committee an invitation is extended to the members of the American Association for the Study and Prevention of Infant Mortality.

Hospitals Plan Whirlwind Campaign.—The Children's Hospital campaign for a fund of $500,000 will be under the direction of E. T. Stotesbury, Arthur H. Lea and other prominent citizens, and will begin on October 18, to last ten days.——The Mercy Hospital and School for Nurses, which sets $150,000 as the goal, will start on October 20. The superintendent of the hospital, Dr. R. B. Jackson, sent a letter to the Children's Hospital Committee pleading with it to select another date, as the Mercy Hospital had been planning its campaign for the last six months.

Child Federation Election.—Dr. Joseph S. Neff, former director of the Health and Charities, was chosen president of the Child Federation, at its annual meeting, October 7. He succeeds Edward W. Bok, who declined reelection, but was chosen honorary president. F. Wallis Armstrong, Dr. Samuel McClintock Hamill and Francis S. McIlhenny were elected vice presidents, and J. Ernest Richards, treasurer. The board of directors will include the officers and the following: Albert P. Gerhard, John D. Johnson, George C. Shane, Dr. Henry D. Jump, Mrs. Thomas Robins, Mrs. Alfred Stengel, Charles Z. Tryon and Ernest L. Tustin.

Personal.—Dr. Raymond T. Wayland has gone to San Jose, Calif., where he has been placed in charge of the construction of a large hospital.——Dr. Ruth Webster Lathrop, professor of physiology in the Women's Medical College of Pennsylvania, Philadelphia, has been nominated by the faculty to fill one of the six vacancies in the board of education.——Dr. William C. Hollopeter, for fifteen years professor of pediatrics in the Medico-Chirurgical College of Philadelphia, has retired from the teaching faculty.——Drs. David N. Vogt, Joseph P. Garvey, Robert W. Rubin and Samuel L. Immerman have passed the examination of the Civil Service Commission for resident physician of the bureau of health.——Dr. William B. Swartley sailed September 18 to join the American Ambulance Hospital at Paris.

National Committee Campaign on Feebleminded.—Headquarters have been opened in the Empire Building by the recently formed Committee on Provision for the Feebleminded, a national organization formed to disseminate knowledge concerning the menace of feeblemindedness, and to initiate methods for its eradication. The work of the committee is being financed by private subscriptions. The board of directors includes: chairman, Dr. Milton J. Greenman, director of Wistar Institute; R. Bayard Cutting, member board of directors of training school at Vineland, New Jersey; Dr. Charles H. Frazier, president of the Pennsylvania Public Charities Association, Philadelphia; Bleecker van Wagenen, member of the board of directors, training school at Vineland, New Jersey; Mrs. C. C. Rumsey, New York City; Henry V. Osborne, judge court of common pleas, Newark, N. J.; Mrs. Caroline B. Wittpenn, Hoboken, N. J.; E. R. Johnstone, superintendent of the training school, Vineland, N. J., and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene, New York City.

TENNESSEE

Public Health Sunday in Nashville.—Prominent physicians occupied the pulpits in the National Church, October 17, and preached the gospel of sanitation and health preservation.

Health Inspection Tour of Middle Tennessee.—Dr. Reese Q. Lillard, Nashville, secretary of the State Board of Health, accompanied by Dr. Olin West, Nashville, of the Rockefeller Sanitation Committee, and Dr. John A. Ferrell, New York City, assistant inspector-general of the International Health Commission, started on a health inspection tour of middle Tennessee, September 28.

Reporting Tuberculosis.—In a report, September 16, to the city commission, it was shown that the physicians of the city had reported only nine cases of tuberculosis in Chattanooga during the previous four months, while there had been forty-five deaths from the disease. The state law makes it compulsory on the part of physicians to report this disease, and they were severely criticized by Commissioner Huffaker for their failure to do so. The names of tuberculosis patients are kept secret by the department.

Personal.—Dr. Heber W. Jones, Memphis, who has been seriously ill in the Baptist Memorial Hospital, is reported to be out of danger.——Dr. Samuel W. Hodge, Knoxville, has returned after several months' work against typhus fever in Serbia. For his services, Dr. Hodge received the decoration of the cross of the Order of St. Savo from King Peter I.——Dr. J. Victor Henderson, Lafollette, company physician for the Lafollette Coal and Iron Company for the last nine years, has resigned, and after a term of postgraduate study in the East, will practice in Knoxville.

UTAH

Personal.—Dr. David W. Henderson, Brigham, has been appointed local physician for the Ogden-Logan and Idaho Electric Railway Company.

New State Officers.—At the twenty-first annual meeting of the Utah State Medical Association held in Salt Lake City, September 28 and 29, under the presidency of Dr. Robert S. Joyce, Ogden, the following officers were elected: president, Dr. Eugene W. Whitney, Salt Lake City; vice presidents, Drs. Lashbrook B. Laker, Eureka; Charles F. Osgood, Ogden, and Frederick Dunn, Springville; treasurer, Dr. Howard P. Kirtley, Salt Lake City (reelected); councilor, second district, Dr. Thomas C. Gibson, Salt Lake City (reelected); and delegate to the American Medical Association, Dr. Solomon G. Kahn, Salt Lake City (reelected). Salt Lake City was selected as the next place of meeting.

WEST VIRGINIA

Typhoid Epidemic.—Charleston is reported to have the worst epidemic of typhoid fever which has been experienced in many years. The health officer estimates that nearly fifty cases are under treatment. No cause for the epidemic has as yet been found.

Change of Address.—Dr. Samuel L. Jepson, for two years secretary of the State Board of Health, was appointed, under the new law, as state health commissioner, and has removed his office from Wheeling to Charleston, where he occupies rooms in the Capitol Building.

Society Suggests Expansion.—At the August meeting of the Mercer County Medical Society, held at Bluefield, the first steps were taken toward the organization of an association to include Mercer and McDowell counties, W. Va., and Tazewell, Russell and Wise counties, Va.

Hospital Association Formed.—The West Virginia State Hospital Association, composed of physicians and superintendents of state hospitals, was organized at Charleston, September 21, with an initial membership of twenty-five. Dr. George C. Schoolfield, Charleston, was elected president, and Dr. Wade H. St. Clair, Bluefield, secretary-treasurer. The next meeting will be held in Wheeling.

Practice of Medicine and Surgery Defined.—The new law of West Virginia enacted in 1915 says: "The term, 'Practice of Medicine and Surgery' as used by this act shall be construed to be treatment of any human ailment or infirmity by any method. *To open an office for such a purpose or to announce to the public in any way a readiness to treat the sick or afflicted, shall be deemed to engage in the practice of medicine and surgery,* within the meaning of this act."

Hospital Internship Not the Equivalent.—The West Virginia Public Health Council (formerly the State Board of Health) has refused to accept a hospital internship as the equivalent of a year of practice required to those seeking licenses through reciprocity. A year of actual practice is considered necessary to establish a physician's character and ethical conduct. The council is considering the advisability of extending the requirement to two years of actual practice.

WISCONSIN

More Money Needed for Sanatorium.—Bonds were voted by the Milwaukee County board last month for an additional $160,000 which is needed for the Muirdale, the new county tuberculosis sanatorium.

Personal.—Dr. Austin O. Olmstead, Green Bay, who has been critically ill in a local hospital for two months, has recovered and resumed practice.——Dr. Samuel D. Greenwood, Menasha, fractured his arm at the elbow while cranking his automobile, September 30.

Medical Women Meet.—At the annual meeting of the Wisconsin Women's Medical Society held in Milwaukee, October 5, Dr. Mary Piper Houck, La Crosse, was elected president; Dr. Minnie M. C. Hopkins, Oconto, vice president; Dr. Ada B. Chandler, Pardeeville, secretary, and Dr. Ella Chaffee Fay, Whitewater, treasurer. The next meeting will be held in La Crosse, and at this time the medical women of Iowa and Minnesota will be invited to meet with the women physicians of Wisconsin.

CANADA

Hospital News.—The Toronto branch of the Red Cross Society has raised during the past hospital year, ending

September 30, $166,872.——The cornerstone of a new hospital was laid at Port Hope, Ont., October 8. It is to cost $25,000.

More Ontario Doctors for the Front.—Forty doctors from the Toronto military division have been selected by Lieut.-Col. Fredk. W. Marlow for the Royal Army Medical Corps, and they have been ordered to prepare to leave at once. Toronto General Hospital will lose a large part of its house staff as many of the senior house physicians have volunteered and been accepted for overseas service.

Personal.—Dr. Wm. Norman Gilmour, Brockville, Ont., was in Australia when war broke out. He went at once to South Africa and joined the forces under General Botha, afterward proceeding to England, where he joined the R. A. M. C.——Dr. George Musson, Chatham, Ont., has been appointed medical officer of health in that city in succession to the late Dr. William R. Hall. Dr. Musson is at present in France.

Ontario Medical Commission Gets to Work.—Notice has appeared in the public press stating that the commission will hold a public session in the Parliament buildings, Toronto, October 16. The object of this meeting will be to ascertain what bodies or individuals wish to present their views to the commissioner. It is the desire of the commissioner to be in possession of the views of those concerned before entering on any contentious questions.

Bruce Returns to Toronto.—Speaking of Lieut.-Col. Geo. G. Nasmith, sanitary officer with the First Canadian Overseas Force, and formerly chief of the laboratories of Toronto, Lieut.-Col. Herbert A. Bruce, on his return to Toronto, states Dr. Nasmith sent the first report to British headquarters on the gases used when the Germans broke through at Langemarck. Dr. Nasmith's opinion has since proved to be correct, and his recommendations the best means for counteracting their effects. His suggestions were immediately adopted by the War Office. Dr. Bruce made a tour of inspection of Canadian overseas hospitals. Canada has over 5,000 beds in England and about 5,000 beds in France; and there are no hospitals in France superior to the Canadians', is his opinion. He visited No. 2 Canadian Hospital at Treport which is in command of Major J. T. Clark, a former practitioner in Toronto. Major Clark has worked out a particularly good method of admitting patients which enables them to be handled with great rapidity, and his method has been adopted by a number of British hospitals. Dr. Bruce also visited McGill Base Hospital at Camiers.

GENERAL

Meeting of Pellagra Association.—The National Association for the Study of Pellagra will hold its third triennial meeting at Columbia, S. C., Oct. 21 and 22, 1915. An excellent program, covering a complete survey of the pellagra situation, has been arranged.

New York and New England Surgeons to Meet.—The twenty-fifth annual meeting of the New York and New England Association of Railway Surgeons will be held at the Hotel Astor, New York City, October 21 and 22, under the presidency of Dr. William H. Marcy, Buffalo.

Red Cross in Mexico Recalled.—Telegraphic instructions have been sent from Washington to close the Red Cross station in Mexico City and directing Charles J. O'Connor, the Red Cross representative in the Mexican capitol, to return to the United States. The Carranza authorities declare that relief work is no longer necessary in the city of Mexico.

Annual Meeting of American Roentgenray Society.—At the annual meeting of the American Roentgenray Society, held at Atlantic City, September 22 to 25, the following officers were elected: president, A. W. Crane, Kalamazoo, Mich.; vice presidents, W. B. Bowman, Los Angeles, and A. P. Gibbs, Columbia, S. C.; secretary, W. F. Manges, Philadelphia; treasurer, W. A. Evans, Detroit.

Erie Surgeons Hold Meeting.—The annual meeting of the Association of Erie Railway Surgeons was held in Buffalo, September 30 and October 1, under the presidency of Dr. John D. Zwetsch, Gowanda, N. Y. Dr. Salem Heilman, Sharon, Pa., was elected president; Dr. Rufus S. Harnden, Waverly, N. Y., vice president, and Dr. Bertis R. Wakeman, Hornell, N. Y., secretary-treasurer (reelected).

Antituberculosis Conference.—At the third annual meeting of the Mississippi Valley Tuberculosis Conference held in Indianapolis, September 29 to October 1, it was decided to drop Montana, Wyoming, Colorado and Idaho from the conference territory. There were 640 delegates who registered during the session. It was decided to hold the 1916 conference in Louisville, Ky., and the following officers were elected: president, Mr. Walter D. Thurber, Indianapolis; secretary-treasurer, Dr. Dunning S. Wilson, Louisville, Ky.; and councilors, Mr. Courtenay Dunwiddie, Cincinnati; Miss Carol F. Walton, Ann Arbor, Mich., A. W. Jones, Jr., St. Louis; Dr. Walter J. Marcley, Minneapolis, and Dr. Ethan A. Gray, Chicago.

Meeting on Prevention of Blindness.—The first annual meeting of the National Committee for the Prevention of Blindness will be held in the Russell Sage Foundation Building, New York, Nov. 4, 1915. Among the speakers who will be present are Ex-President William H. Taft and Dr. George E. deSchweinitz, Philadelphia. The national committee has a number of exhibits which are loaned to individuals or organizations desiring to promote the work of the prevention of blindness. The committee also distributes a large number of publications. In the year 1914-1915 about 100 blind children, victims of ophthalmia neonatorum, were sent to the various schools for the blind. The number of such children, however, is decreasing as shown by the figures of this society; from 23.9 per cent., for 1910-1911, to 15.1 per cent., in 1914-1915.

Red Cross Christmas Seals.—Over one-half million dollars was raised last year in the United States from the sale of Red Cross Christmas Seals. Much good is derived from the educational influence of the seal campaign as well as by the work which is supported by this huge sum. A banner is presented to the winner making the largest sales among villages, towns, cities, or counties in each of ten groups of localities, classified according to the amount of their population. A similar banner is awarded to the state in each of three groups which sells the most seals per capita. Announcements of the winners in the pennant campaign will be made April 1, 1916. Literature concerning the campaign is furnished by the National Association for the Study and Prevention of Tuberculosis, 105 East Twenty-Second Street, New York, which together with the American Red Cross, conducts this campaign.

FOREIGN

Danish Periodical Index.—A Copenhagen exchange states that the librarians of Denmark have made arrangements to publish an annual index of the contents of the periodicals published in Denmark. There are about 125 on their list.

Deaths in the Profession Abroad.—At Florence Hugo Schiff, professor of general chemistry and brother of the physiologist Moritz Schiff. He was one of the founders of the *Gazetta clinica italiana.*——A. Oppel, professor of anatomy at the University of Halle, aged 53.

WAR NOTES

River Ambulances of the Italian Red Cross.—Six steam barges have been fitted up for this purpose and are doing good service on the Po and Mincio rivers. They take the wounded to the base hospitals at Cremona, Mantua and Piacenza.

Anticholera Vaccination in Italy.—A decree issued, August 22, makes anticholera vaccination compulsory in the army and provides for its application to certain categories or groups of persons in the civilian population as the authorities may deem it necessary. The expense is to be borne by the state.

Notification of Dysentery at Naples.—The prefect of the province of Naples has ordered that all cases of dysentery and those even suspected of dysentery should be reported immediately to the authorities under severe penalty. It is hoped in this way to detect and check epidemics of dysentery and cholera in their incipiency.

The Quirinal Transformed into a Hospital.—The entire first floor of the royal palace at Rome has been transformed into a hospital with 206 beds for the wounded. The famous halls, eleven in number, have been named for the first eleven soldiers decorated for conspicuous gallantry. The queen has planned and equipped this hospital, which is unique in its artistic setting and historied past. Dr. E. Scafi is medical chief of the hospital.

BERLIN LETTER

Berlin, Sept. 15, 1915.

Personal

September 11 Leipzig lost its municipal physician for children, Professor Taube, who died at the age of 63. Through his efforts Leipzig became the first German city to make provision for the children's welfare, especially extending protection to illegitimate children. In 1896 Leipzig instituted the so-called Leipzig system which provided municipal guardianship for these children. Taube further aided in procuring proper care for the nurslings.

The War

BANDAGE MATERIAL

The cessation of the importation of cotton threatened for a time to embarrass seriously the manufacture of bandage material. Both in school and at home the children, and the women as well, began to make lint, and physicians were advocating the use of old bandages which had been disinfected thoroughly. Since then the war ministry has given notice that no fear need be had of a shortage of bandage material and that it was unnecessary for any one to spend time making lint. In fact, the use of lint has been forbidden because the material from which it is made can be made use of to good advantage for other purposes.

RESTRICTION OF SALE OF LIQUOR

The activities of the authorities to regulate the use and distribution of foods have been extended recently to curtailing the sale of whisky and other spirits. The police authorities of Berlin have forbidden such sale between 9 p. m. and 9 a. m. in places in which the service is automatic or where it is rendered by women. No one is allowed to sell any liquor to intoxicated persons. Drug stores may continue to sell brandy for medicinal purposes. The punishment for failure to observe these rules is imprisonment or a monetary fine as high as 10,000 marks ($2,500).

MEASURES AGAINST VERMIN

Continued effort is being made to free the soldiers from vermin and to prevent the spread of epidemics by flies and other insects. Disinfection stations are being built everywhere along the eastern border, usually in the immediate vicinity of railroad depots. Eight such institutions have been constructed in various cities and villages of East Prussia and Poland, and two are now being built in Bavaria near the southern border. Each institution consists of eight individual buildings in which 500 men can be taken care of at one time. After a delay of eight hours these troops are transported further. Each institute can take care of 12,000 men in each twenty-four-hour period. Each of the eight individual buildings comprising such institutions is divided into a clean and an unclean part so that mingling of people is impossible. A chief surgeon is in charge, with two assistant surgeons and three inspectors on his staff. A central powerhouse provides the steam necessary for disinfection and light, power and everything else needed in the institution. Two hundred tons of coal are burned daily in each powerhouse. Laundries, kitchens and administrative quarters are provided. The officers are housed in a building containing bath tubs.

The plan of procedure in each institution is as follows: At the entrance, on the unclean side, every man receives a white net, in which he can place his clothing, and a brown net in which are to be placed other than cloth wearing apparel, such as his helmet, his boots, leggings, knapsack—anything to be sterilized by dry heat. A smaller net is given out in which are placed articles of value such as note books, tobacco, portfolios, etc., and finally a distinguishing mark is placed around the neck of the soldier containing a number which corresponds to that found on each net. Each man does his own packing. The nets containing valuables are gathered together in larger nets. The soldier then enters the institution, having first been given a pair of slippers, deposits the nets containing the leather goods and valuables at one window. At another window he deposits his watch, tobacco, articles of food and anything which does not need to be disinfected. He steps into the waiting room of the unclean side. One hundred and twenty-five men disrobe and each places his clothing in the white net which is taken to the large room in which are the steam disinfecting apparatus. Provision is also made for hair cutting so that soldiers who are in need of tonsorial services may receive them. Each man then takes a shower-bath for fifteen minutes, after which he is given a towel. In ninety minutes the 125 men are cleansed thoroughly, are given new slippers and underwear and pass on to the clean side where they receive their disinfected clothing. In six hours 500 men have passed from the unclean to the clean side, and the disinfection of their leather goods and valuables having now been completed, these articles are returned to them. After eight hours these 500 men have left the institution. During their stay on the clean side the soldiers are also given meals, officers receiving the same food as privates. Each disinfecting station is provided with clean clothes for 100,000 men. All worn-out clothing is replaced. Any article which may be the carrier of vermin or which has been badly worn by usage, and therefore is not worth while disinfecting, is replaced. The soldiers then march into disinfected railway coaches. The employees at each disinfecting institute number 380. Special provision is made for the transportation of horses and trains. The detail in charge consists of one staff officer, six commissioned officers, forty-two noncommissioned officers and 910 men.

Ample provision has been made for water at each place. In Alexandrowo two wells, each 38 meters in depth, were constructed and these furnish sufficient water. At other places river water had to be used, the water having been previously sterilized. The outflow from the institute is also disinfected and conveyed into some running stream. To secure efficient service, good system is absolutely necessary. Everything is provided for and everything is done at a certain time and in a certain way. Bell signals are used to give notice of everything that needs to be done. Everything that is not to be used again is destroyed by fire in a specially provided incinerating oven.

The Russian prisoners are very hard to handle in this regard as they do not cooperate with the German authorities in carrying out these disinfection methods. They bury their vermin infested clothing, or, if possible, sell it to their countrymen in other companies. The reason for such action is not very apparent, although superstition may be at the bottom of it. Therefore, it is unfortunately not possible to carry out these plans for disinfection as effectively among the many thousands of prisoners as one would desire.

It has been determined that the Russians display a much greater resistance to typhus than the Germans. Whereas the mortality among the Russians is only 2 per cent., the mortality among the German doctors and nurses is about — per cent. [This percentage is deleted from the original letter by the censor.] However, strenuous efforts are now being made to rid the Russian prison camps of vermin. Each person is disinfected once a week and it is expected that before long the authorities will have full control of the situation.

It is apparent from what has been said that the entire eastern front has been converted into a huge filter to guard against the spread of epidemics and the carrying of disease. Each man in the army, from the general down to the private, prisoners as well as our own troops, must conform to the regulations made by the military and sanitary authorities before he can enter the German empire.

PARIS LETTER

Paris, Sept. 23, 1915.

The War

QUESTIONS AFFECTING THE WORK OF AN AMBULANCE UNIT AT THE FRONT

At one of the last sessions of the Société de chirurgie de Paris, Dr. R. Picqué, surgeon of the hospitals of Paris, who, since the first day of mobilization, that is, for thirteen months, has been in command of the same ambulance unit, read an interesting paper, showing how ambulances of the old type may be so improved by the aid of the resources of the medical service as to be adapted to the novel and imperative necessities of the present war. The leaving of considerable initiative to the medical heads and the supplying of all their demands have permitted the rapid transformation of obsolete organizations into formations in which all surgical operations can be performed. If circumstances permit the units to remain stationary for a considerable length of time, they can be extended into veritable front-line hospitals without losing their essential mobility.

Picqué was therefore surprised to hear at the meeting of the society, during numerous discussions on military surgery, the practical unanimity with which speakers advocated the rapid removal of the wounded toward hospitals at the rear provided with competent staff and surgical equipment.

He was particularly surprised to hear this doctrine applied to patients with important fractures, whose chances for the preservation of their limbs, and even their lives, would be so much enhanced by immediate surgical treatment in the ambulance. In his opinion the present war, from the outset, has shown the importance of intensive surgery of the first line; and the long defensive warfare has singularly favored the extension of this first-line surgery. Such surgery today is possible, not only for surgeons furnished with one of the modern automobile surgical ambulances, not only for those whose good fortune it is is to be able to install themselves in buildings, such as colleges, barracks or châteaux, easily transformable into first-class hospitals, but even for surgeons who, like Picqué, have at their disposal only an isolated mill. With the resources which the medical service offers without red tape to those who wish to make use of them, it is easy for any man of initiative to create an organization which meets all the necessities of present day surgery. In fact, Picqué has seen almost 10,000 wounded men pass through his transformed ambulance to be operated on by him under very satisfactory conditions, the operations including all the procedures that one may be called on to employ in times of war.

Dr. Delbet, professor of clinical surgery at the Faculté de médecine de Paris, while complimenting Dr. Picqué on his ingenuity and perseverance and the methodical way with which he has created his present organization, thinks there is notwithstanding a defect in the principle. Whatever Picqué may say, the organization has thus lost the essential character of an ambulance unit, namely, mobility. Moreover it is installed too near the firing line, that is, only 8 kilometers away. In warfare in which the troops are incessantly in motion, at 8 kilometers one is exposed to the fluctuations of combat; in the present war one is exposed to ordinary shells. The wounded greatly need rest and quiet; they have neither of these in the midst of the noise of cannonshot and the still more disagreeable noise of bursting shells. The distance at which the ambulance unit should be stationed, moreover, depends on the means of transportation. With horse-drawn vehicles, 8 kilometers is a long distance to traverse. It takes no more time to traverse 18 or 20 kilometers with an automobile. For these reasons the superior consulting commission of the medical service has demanded that surgical ambulance units provided with numerous automobiles for the transportation of the wounded should be placed 18 or 20 kilometers from the firing line.

Dr. Tuffier, agrégé professor in the Faculté de médecine de Paris and surgeon of the hospitals, likewise emphasizes the danger of ambulances placed too near the firing line. The operating rooms that he has seen installed at the Harazée and at the Four de Paris a few months ago have been nonexistent for several weeks, having been destroyed by the enemy's bombardment. Moreover, immobilized ambulance units, in order to act as real hospitals, ought to possess a considerable number of beds, while, if they accumulate many seriously wounded patients, they may be obliged to remove them too rapidly, which is infinitely more dangerous for the patients than if they had in the first place been sent farther on, 15 or 20 kilometers, before anything had been done for them.

IMPROVEMENT OF THE MEDICAL SERVICE

In response to suggestions made by M. Astier, senator from the department of the Ardèche, for the improvement of the medical service, M. Justine Godart, assistant secretary, has explained the plan of reform which he is putting in practice. In order to utilize more effectively the special abilities of physicians, he has ordered the regional directors of the medical services to report each month particulars with regard to the physicians in their respective regions—the name, the age, the specialty, etc. He has, moreover, recently consulted a commission composed of professional surgeons for the purpose of studying the best orthopedic methods of furnishing cripples with necessary apparatus within the shortest possible space of time. Competitive examinations and the utilization of the professional abilities of pharmacists, dentists and nurses have already been the subject of careful study.

WOUNDS OF THE HANDS BY SMALL PROJECTILES AND THE OPERATIONS WHICH THEY REQUIRE

At a recent session of the Académie de médecine Dr. E. Delorme, medical inspector general of the military medical service, called attention to the fact that manipulations and massage are often insufficient to reduce the deformities of the hand and fingers and the gross functional incapacities produced by wounds of the hands from small projectiles. Under such conditions it is often well to make use of restorative surgery. Amputation, which is the ordinary method of treating crooked, ankylosed and troublesome fingers, is acceptable, in Delorme's opinion, only when well-directed restorative orthopedic surgery has shown itself insufficient. The most important operations for the treatment of wounds of the hands consist of excisions of cicatrices, generally combined with disengagement or restoration of the tendons and reduction of stiffness, sometimes excision of articular extremities or calluses. Direct suture of the tendons being often impracticable, Delorme has recourse to various other well-known procedures. The care of the patients after these conservative operations is very important. It consists in progressive mobilization (passive and active) of the fingers, electricity, compression and massage of cicatrices, compression of edemas, etc.

THE FORM OF CRUTCHES

The minister of war has called the attention of the head physicians of all hospitals to the importance of the form of the crutches furnished or lent to men wounded in the legs. The straight crutch with a single cross piece, if badly padded or ill proportioned, frequently causes paralysis by compression of nerves.

A DUTCH FLYING HOSPITAL

The Dutch steamship *Batavier III*, from Amsterdam, has landed at Havre a flying hospital, organized by private subscription and placed under the command of Dr. Bierens of Haan, who has already directed organizations of this kind in the South African war of 1899-1901 and the Balkan wars. The staff comprises, besides Dr. Bierens, 4 physicians, 26 female nurses and 5 male nurses. This Dutch hospital unit, composed of 200 beds and capable of being moved in forty-eight hours, was sent to Paris, where it was received at the Saint Lazare station by representatives of the assistant secretary of the medical service and by Medical Inspector-General Dziewomski, director of the medical service of the military government of Paris.

AN AMERICAN GIFT

Mr. Frederick H. Allen of New York has just remitted to the president of the municipal council of Paris, in the name of the Committee of Mercy, of which Mr. Allen is president, the sum of 21,000 francs ($4,200) for the Oeuvre des trains de blessés.

LONDON LETTER

LONDON, Sept. 24, 1915.

The War

THE DEARTH OF ARMY SURGEONS

The difficulty of obtaining a sufficient number of surgeons for the army still remains a pressing problem. Though nearly a fourth of the whole profession is engaged in military duties in one form or another, there is still a shortage of nearly 2,000. A subject which has been under the consideration of one of the war emergency committees (bodies formed under the auspices of the British Medical Association) is the making of some arrangement in the event of physicians dying while on military service. It is thought that those who join would feel the sense of responsibility to their families less overburdening if some arrangement was in force for looking after their interests in the event of death. It has been agreed to form small local subcommittees, consisting of a few men of high standing in the local profession, to act as professional advisers and to collaborate with the legal executors of those who die. Their duty would be either to sell the practice on the best terms available or to see that the practice is carried on until some period after the war when practices again become salable. The Central Emergency Committee of the British Medical Association has issued an appeal to the public pointing out that physicians at the call of duty are going to assist in saving the lives and relieving the sufferings of their countrymen at the risk not only of death and injury but also of the loss of the means of livelihood on their return. While recognizing the right of every one to consult any physician he chooses, the committee appeals to all citizens not to give up their usual medical attendant on account of temporary absence on military duty. All the physicians who have left their practices have either appointed a locum tenens or arranged with neighboring physicians to carry on the work while away. The committee hopes that patients will inform any physician they may consult that their own physician is absent on military service and that they intend to place themselves again under his care when the need arises on his return. The physicians who remain are willingly attending the patients of those on service on the distinct understanding that they shall not be asked to continue to do so after the war. Addressing a board of guardians (the bodies in the country who are entrusted with the care of the poor) a well-known consultant, Sir James Barr, said that all the medical work of the country could be done by physicians over military age and thus all the younger men released for foreign service. "Get men over military age for either part or whole time service for your work until the war is over," he said, "and you will thus be able to set all your young men free to serve their country as they will never have chance of doing again." If the number of men necessary cannot then be found, he considered that the only course would be to apply to the United States.

THE RESPONSE OF THE COLONIES

The manner in which the British self-governing colonies are voluntarily assisting the mother country in this critical hour is an object lesson to the world. Like ourselves, they are willing to make any sacrifices. The federal government of Australia has determined to augment the Australian General Hospital in France by an additional 1,040 beds, bringing the total number up to 2,000. The equipment will be undertaken in England, but the personnel will be obtained in the commonwealth. To staff the second portion of the hospital, thirty-six physicians, fifteen noncommissioned officers, eighty nurses and 170 orderlies will be required. In addition, physicians will be sought from time to time for reinforcements, and the organization of still another unit is under consideration. But, as in England, the demand for medical officers is greater than the supply.

HOSPITAL SHIP SUPPLIED BY NEW ZEALAND

One of the best hospital ships afloat is being equipped in New Zealand. A large steamer, the *Maheno*, is being utilized. Cabins have been removed and the saloon transformed. There are two special wards for five patients, an officiers' ward, a noncommissioned officers' ward and ten wards for the rank and file. One row of beds is composed of fixed cots, while a second is so constructed that the individual cot can be allowed to swing with the movement of the vessel or fixed by means of a metal plate dropping into a slot. It is proposed to admit the more seriously wounded into a special ward amidships, while the less serious cases will be in the space over the transom. The total number of beds for patients is 388, but if necessary the officers' and nurses' drawing room can be transformed into a ward of sixty additional beds. The patients will be received through iron watertight doors at the ship's side, at the level of the lower deck, and hoisted on stretchers which act as mattresses for the beds. Trolleys will be used to convey the stretchers along the passages, and capacious lifts to transfer them from the lower to the main or upper deck. The laundry is well equipped; there are superheated steam cauldrons, electric apparatus for ironing, drying centrifuges, etc. The most modern plant for sterilizing dressings and instruments has been provided, and there is a special system for the automatic delivery of sterilized instruments and dressings on sterile trays on which they are conveyed to the operation theaters. There are two operating theaters, the smaller for minor surgery. The larger is equipped in the latest fashion; white enamel and bright metal are everywhere in evidence. The Roentgen-ray room and the bacteriologic laboratory have been planned with great care. It is said that no field hospital can offer the wounded soldier greater comfort and security, and that few base hospitals are so well equipped.

FLY PLAGUE AT THE FRONT

It was foreseen that a plague of flies was to be expected both in Flanders and in Gallipoli, owing to the conditions inevitably associated with military operations. In Flanders elaborate precautions were taken and date back to April last —that is, before the commencement of the house-fly season, when a circular memorandum on "The Abolition of Flies in Camps, Billets and Hospitals" was issued by the director-general of medical services of the British forces in the field. He pointed out that within the area occupied by the British forces there were concentrated enormous numbers of men and horses, with the result that great quantities of stable manure and other waste organic matter were produced, and that in places along the line of the front there were many unburied bodies. He anticipated that in consequence flies in unparalleled numbers would appear in the course of the summer and autumn, unless adequate measures were taken to prevent breeding. The memorandum contained full instructions for the prevention of the fly plague, and among other fly poisons enumerated was the solution of sodium arsenite which has been recently employed with success in South Africa. Soon after the issue of this circular, a special entomologic commission for service in the field was appointed; it consisted of three well-known entomologists, Mr. Robert Newstead, F.R.S., professor of medical entomology, Liverpool University; Mr. R. W. Jack, government entomologist, Southern Rhodesia, and Captain E. E. Austen of the British Museum. The commission was instructed to study the question on the spot and to inquire into the efficacy of the measures for the suppression of flies adopted or projected. An extensive series of experiments was made with a view to ascertaining the best method of dealing with fly-breeding places which it might be impossible to destroy by fire. As a result, further recommendations were issued. Since then the commission has been continuously engaged in visiting all parts of the front in turn with a view to giving advice to sanitary officers and others. Visits have been paid to a large number of casualty clearing stations, field ambulances and advanced dressing stations, to the town of Ypres, to the trenches and to farms and other billets within range of the enemy's guns. The flies to be dealt with have been house-flies, bluebottle flies, and greenbottle flies. The places where the insects were found to be breeding, and the best practical means for checking them were indicated. In the trenches themselves house-flies have been less numerous than bluebottle and greenbottle flies, although in certain places in the war zone in France and Belgium house-flies have been more numerous than could be wished. The blow-flies, blue and green, have presented greater difficulties. Dr. Shipley has shown that there are two species of bluebottle or blow-flies, *Calliphora erythrocephala* and *Calliphora vomitoria*. They are outdoor flies which enter houses in search of a suitable place to deposit their eggs, by preference on fresh or decaying meat, but even on wounds. The habits of the greenbottle fly, *Lucilia caesar*, are similar, but it is said to prefer fish. Though no practical means for destroying these flies in the trenches on a wholesale scale have been devised, it has been found possible to drive them away by periodic spraying with a suitable fluid.

The Fear of Premature Burial

The fear of premature burial leads from time to time to strange requests. In the latest case a maiden lady bequeathed $100 to her physician on condition that he should see that her throat was cut from ear to ear before burial.

Marriages

Captain William Stevens Shields, M.C., U. S. Army, to Miss Eileen Goggan, Galveston, Texas, at Dallas, Texas, September 25.

Joseph Edwards Kerney, M.D., Providence, R. I., to Miss Bertha Pendorf of Oneida, N. Y., at Philadelphia, September 25.

Welcome Blaine Tilton, M.D., to Miss Violet Deming, both of Clinton, Okla., at Oklahoma City, Okla., September 28.

Sterling Bunnell, M.D., San Francisco, to Miss Maude Compton of Santa Rosa, at Berkeley, Calif., September 22.

Russell Adams Scott, M.D., Evanston, Ill., to Miss Julia Beauchamp Hinkle of Hawesville, Ky., October 14.

Harry Marshall Armitage, M.D., Chester, Pa., to Miss Emily Van Gordon Pudan, of Yale, Okla., recently.

Burlington Earl Smith, M.D., to Miss Annette Florence Erickson, both of Portland, Ore., September 22.

William Lee Gills, M.D., Roanoke, Va., to Miss Elsie Louise Jones of Cheshire, Conn., September 15.

Selmer Martin Johnston, M.D., Buhl, Minn., to Miss Louise de Hass of St. Paul, September 18.

Ray Ranney Kulp, M.D., Davenport, Iowa, to Miss Marie Miller of Fort Wayne, Ind., October 12.

Albert Allen, M.D., to Miss Agnes Marguerite Cross, both of Los Angeles, September 22.

Samuel Bell, M D., to Jean A. Vernier, M.D., both of Detroit, August 13.

Deaths

John Gaunt Brooks, M.D. Jefferson Medical College, 1868; aged 74; formerly a Fellow of the American Medical Association; a charter member and president of the Kentucky State Medical Association in 1887; Southwestern Kentucky Medical Society and Paducah Medical and Surgical Society; commissioned as traveling physician of the Queen of the Hawaiian Islands for the islands of Maui, Molokai and Lanai; for several years a member of the City Council and of the Board of Education of Paducah and of the health boards of Paducah and McCracken County; for more than twenty-seven years a director of the City National Bank of Paducah; died in a sanatorium in Louisville, September 25, from fatty degeneration of the heart. At a meeting of the McCracken County Medical Association, September 25, it was decided to prepare a resume of Dr. Brooks' achievements as a physician, for publication in the Kentucky State Medical Journal.

Edward Nelson Tobey, M.D. Harvard Medical School, 1901; aged 44; a member of the Massachusetts Medical Society; instructor in tropical diseases in the St. Louis University since 1914; demonstrator and research assistant in the Liverpool, England, School of Tropical Medicine in 1906-1907; assistant in bacteriology in his alma mater from 1907 to 1911; instructor in tropical medicine in the Harvard Summer School of Medicine from 1908 to 1910; instructor in pathology in St. Louis University from 1911 to 1914 and thereafter instructor in tropical diseases; assistant city pathologist and bacteriologist of St. Louis; who had been making an investigation of tropical fever in British Honduras; is believed to have been drowned when the steamer *Marowijne* of the United Fruit Company's line, on which he sailed from Belize, August 13, was lost at sea during the hurricane of August 16.

Samuel Kennedy Spalding, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1874; Bellevue Hospital Medical College, 1882; aged 68; of Omaha; a member of the staff of St. Joseph's Hospital, Omaha; neurologist to the Omaha General Hospital; Professor of Nervous and Mental Diseases in the John A. Creighton Medical College, Omaha; for several years chief of the Douglas County, Neb., insanity board; from 1896 to 1899 Health Commissioner of Omaha; and for several years treasurer of the Board of Education; a veteran of the Civil War; while attending the national encampment of the Grand Army of the Republic in Washington, D. C., was stricken with cerebral hemorrhage, September 28, and died the next day.

John Thomas Gibbons, M.D. College of Physicians and Surgeons in the City of New York, 1889; aged 50; a member of the Association of Military Surgeons of the United States; Major-Surgeon of the Forty-Seventh New York Volunteer Infantry during the Spanish-American War with service in Porto Rico; a member of the staff of St. Catherine's and Bushwick hospitals, Brooklyn, died at his home in that city, October 2, from heart disease.

Stuart Whedon Smith, M.D. University of Michigan, Ann Arbor, 1877; aged 64; a graduate in pharmacy; for twelve years a practitioner of Port Huron, Mich., and later of Denison, Texas, where he made a specialty of diseases of the eye, ear, nose and throat; consulting oculist to the Missouri, Kansas and Texas railroad; died at his old home in Port Huron, Mich., September 24.

William Alexander Graham, M.D. Louisville, Ky., Medical College, 1892; aged 56; a member of the Medical Association of the State of Alabama; formerly president of the Fayette County Board of Censors, county health officer, and secretary and treasurer of the Fayette County Medical Society; died at his home in Fayette, Ala., July 12, from angina pectoris.

Kenneth Frank Junor, M.D. New York University, New York City, 1886; aged 69; of Brooklyn; formerly a Fellow of the American Medical Association; a member of the Medical Society of the State of New York; for several years a missionary of the Presbyterian Church in China and afterward a clergyman of New York City; died in Toronto, Ont., September 26.

Andrew C. Saylors, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1894; a member of the State Medical Association of Texas, a practitioner and druggist of Bynum, Texas; who was stabbed and seriously wounded in an affray in Bynum, in December, 1914, and afterward shot and killed his adversary; was shot and killed at Hillsboro, Texas, October 2.

Frederick Fillmore Burtis, M.D. Albany, N. Y., Medical College, 1898; aged 38; of New York City; formerly city physician and police physician of Schenectady, N. Y., and coroner's physician and deputy coroner of Schenectady County; surgeon of the Panama Railroad and Steamship Company's steamer, *Advance*; died on board that ship, September 6.

Robert H. Hews, M.D. University of Buffalo, 1874; aged 70; of Rockwell City, Iowa; local surgeon of the Illinois Central and Chicago, Milwaukee and St. Paul systems and a member of the Municipal Board of Health; died September 11, at Long Beach, Calif., where he had gone ten days before on account of ill health.

Warwick Evans, M.D. Georgetown University, Washington, D. C., 1852; aged 87; a Fellow of the American Medical Association; professor of anatomy in his alma mater for several years, beginning in 1856; said to be the oldest practitioner in Washington; died at his home September 30, from heart disease.

Luther Hern Keller, M.D. College of Physicians and Surgeons, Baltimore, 1875; aged 63; of Hagerstown, Md.; a Fellow of the American Medical Association; a specialist on diseases of the ear, nose, and throat; died in the Washington County Hospital, Hagerstown, September 30, from heart disease.

Andrew Victor Jova, M.D. College of Physicians and Surgeons in the City of New York, 1883; aged 56; a Fellow of the American Medical Association; visiting physician to St. Luke's Hospital, Newburgh; died at his home in Newburgh, N. Y., September 20, from tubercular laryngitis.

William G. Webb (license, years of practice, Ohio, 1898); aged 79; of Cameron, Ohio; a Fellow of the American Medical Association; for fifty-five years a practitioner; died in the Ohio Valley General Hospital, Wheeling, W. Va., September 27, a few days after a surgical operation.

Samuel Stewart Marr, M.D. Georgetown University, Washington, D. C., 1876; aged 71; for more than forty years in the employ of the General Land Office, Washington, D. C., as chief of the Railroad Division and later as law clerk; died at his home in Washington, September 26.

Mark Dunklin Sullivan, M.D. College of Physicians and Surgeons in the City of New York, 1906; aged 39; a member of the South Carolina Medical Association, and a practitioner of Pelzer; died in Greenville County, S. C., recently from heart disease.

William L. Parmenter, M.D. Homeopathic Medical College, Cleveland, 1873; aged 81; for forty-two years a practitioner of Buffalo; a member of the Buffalo Academy of Medicine; died in Port Stanley, Ont., September 16, from anemia.

Marquis Lafayette Johnson, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1901; aged 67; a member of the Medical Association of the State of Alabama; of Natural Bridge, Ala.; died at Nauvoo, Ala., June 25, from diabetes.

Prudence Fenneman, M.D. Cleveland Homeopathic Medical College, 1899; aged 51; for thirty years a practitioner of Hamilton, Ohio; died at the home of her sister in Canfield, Ohio, September 22, from carcinoma of the kidney.

Charles Louis Carriere, M.D. Homeopathic Medical College of Missouri, St. Louis, 1871; aged 76; for more than half a century a clergyman, and for forty-three years a practitioner of St. Louis; died at his home, September 17.

Mattie Virginia Seams Lee, M.D. Howard University, Washington, D. C., 1911; aged 41; a colored practitioner of Washington, D. C., and later of Charleston, W. Va.; died in Asheville, N. C., August 8, from pulmonary tuberculosis.

William Sheldon Clark Perkins, M.D. College of Physicians and Surgeons in the City of New York, 1860; aged 78; a member of the Connecticut State Medical Society; died at his home in Norwich, Conn., August 7, from diabetes.

Lester R. Lantz, M.D. American Medical University of Pennsylvania, Eclectic, Philadelphia, 1879; aged 55; of Wyalusing, Pa.; died suddenly from cerebral hemorrhage while making a professional call, September 21.

John A. Currie, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1889; aged 56; of Memphis; a member of the Tennessee State Medical Association; died in the Baptist Memorial Hospital, Memphis, September 27.

Payton Chester Madison, M.D. College of Physicians and Surgeons, Chicago, 1893; aged 52; died, October 1, from heart disease.

Charles Henry Scott, M.D. Eclectic Medical Institute, Cincinnati, 1897; aged 48; of Rupert, Ida.; died in that place, July 17, from the effects of injuries received in a collision between his automobile and a railway train.

Claude Earl Bucher, M.D. Northwestern University Medical School, Chicago, 1912; aged 32; of Williamsville, Ill.; was killed October 5 by the overturning of his automobile while responding to a professional call.

Pearl Tinkler, M.D. Barnes Medical College, St. Louis, 1911; aged 26; of Taylorville, Ill.; formerly a Fellow of the American Medical Association; died in the Baptist Hospital, St. Louis, August 9, from septicemia.

Robert P. Sorrells, M.D. Medical College of Georgia, Augusta, 1875; about 60 years of age; a practitioner and druggist of Clarke County, Ga.; died suddenly at his home in Danielsville, Ga., September 24.

M. M. Welsh, M.D. Keokuk, Iowa, Medical College, 1896; aged 52; a member of the Illinois State Medical Society; died at his home in Odell, Ill., September 28, from pneumonia complicating typhoid fever.

Alphonse Joseph Pierre Garneau, M.D. Laval University, Quebec, 1893; aged 48; for more than twenty years a practitioner of Fall River, Mass.; died at his home in that city, September 20, from heart disease.

Herman Delmar Hunt, M.D. Syracuse, N. Y., University, 1874; aged 68; for nineteen years supervisor and for four years postmaster of Preble, N. Y., died at his home in Preble, July 30, from angina pectoris.

David Benjamin Crediford, M.D. Medical School of Maine, Brunswick, 1892; aged 51; a Fellow of the American Medical Association; died at his home in Rialto, Calif., July 18, from angina pectoris.

Orson Pope Kingsley, M.D. Baltimore Medical College, 1907; aged 36; of Brush, Colo.; a veteran of the Spanish-American war, with service in the Philippines; died in a hospital in Denver, September 23.

Willis T. Honsinger, M.D. University of Vermont, Burlington, 1874; formerly a member of the General Assembly from Clinton County, N. Y.; died at his home in West Chazy, N. Y., September 21.

Gideon Hill Morgan, M.D. University of Tennessee, Nashville, 1881; aged 63; died at his home in Fountain City, Tenn., September 29, from tetanus due to a nail wound of the foot ten days before.

Ithamar Davisson, M.D. Baltimore Medical College, 1893; College of Physicians and Surgeons, Baltimore, 1910; aged 60; died at his home in Flemington, W. Va., July 4, from cerebral hemorrhage.

Nicholas Gibbon Moore, M.D. Jefferson Medical College, 1891; aged 48; of Mooresville, N. C.; died at a hospital in Statesville, N. C., September 19, after an operation for disease of the intestine.

James Bates McKinley, M.D. Starling Medical College, Columbus, Ohio, 1891; aged 49; of Harrisburg, Ohio; died at the home of his sister in Columbus, Ohio, September 17, from heart disease.

Elijah A. Shippey, M.D. University of Louisville, Ky., 1854; aged 82; a Confederate veteran; one of the oldest residents of Hot Springs, Ark.; died at his home in that city, September 22.

John S. Mitchell, M.D. University of Pennsylvania, 1852; aged 87; for sixty-five years a practitioner of Bedford County, Va.; died at the home of his daughter near Bedford, Va., September 8.

Marcus Foster Clemmons, M.D. Vanderbilt University, Nashville, Tenn., 1887; of the Baird's Mill neighborhood, near Lebanon, Tenn.; died at his home September 22, from typhoid fever.

John B. Kennedy, M.D. Vanderbilt University, Nashville, Tenn., 1870; aged 70; formerly of Goldsboro, N. C.; a Confederate veteran; died at his home in Grantham, N. C., September 28.

Frank D. Vreeland, M.D. New York Homeopathic Medical College, 1879; aged 64; of Paterson, N. J.; died at the home of his son in Passaic, N. J., October 4, from cerebral hemorrhage.

Hayes B. Jones (license, Iowa, Jan. 10, 1891); aged 69; of Des Moines, Iowa; a veteran of the Civil War; died in the Methodist Hospital, Des Moines, September 18, from pneumonia.

John Hunter Pope, M.D. University of Virginia, Charlottesville, 1868; a Confederate veteran; for many years a practitioner of Marshall, Texas; died in that city about September 20.

Joseph Francis O'Malley, M.D. Rush Medical College, 1892; aged 47; of Ewen, Mich.; died in St. Mary's Hospital, Marquette, Mich., September 19, from carcinoma of the stomach.

Amelia E. Burroughs, M.D. Homeopathic Hospital College, Cleveland, 1881; physician to the Burroughs Place Dispensary, Boston; died at her home in that city, September 25.

Edmund Beckwith, M.D. Homeopathic Hospital College, Cleveland, 1865; aged 78; a pioneer practitioner of Petaluma, Calif.; died in Talmadge, Calif., about September 21.

Charles Isaac Eberle, M.D. University of Michigan, Ann Arbor, 1879; aged 61; of Blairsburg, Ia.; died in Mercy Hospital, Webster City, Ia., September 20, from heart disease.

Thomas Street Norwood, M.D. Tulane University, New Orleans, 1906; aged 34; a Fellow of the American Medical Association; died recently at his home in Norwood, Pa.

Stephen H. Carroll, M.D. New York Homeopathic Medical College, New York City, 1870; aged 73; died at his home in Albany, September 22, from disease of the liver.

George Clarendon Clarke, M.D. New York University, New York City, 1877; aged 65; died at his home in East Douglass, Mass., August 7, from angina pectoris.

Oliver S. Trimmer, M.D. Cleveland University of Medicine and Surgery, 1864; aged 81; died at his home in Pacific Grove, Calif., July 5, from valvular heart disease.

Albert Maldonado, M.D. Bellevue Hospital Medical College, 1887; of San Francisco; died in Lane Hospital in that city, September 15, from atrophy of the liver.

Alfred O. Pitcher, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1867; aged 72; died at his home in Mt. Pleasant, Iowa, September 18.

S. S. Stacy (license, Arkansas, 1903), aged 89; a practitioner since 1868; died at his home in Willcockson, Ark., July 27, from chronic diarrhea.

John Schnee Thompson, M.D. Rush Medical College, 1873; aged 68; died at his home in Palestine, Ill., July 12, from hemorrhage of the stomach.

Charles B. Roberts, M.D. Ensworth Medical College, St. Joseph, Mo., 1890; died at his home in Towanda, Ill., September 21, from heart disease.

Joseph R. Cox, M.D. Cleveland University of Medicine and Surgery, 1896; aged 44; died at his home in New Castle, Pa., August 21, from paresis.

C. J. Hill Chipman, M.D. McGill University, Montreal, 1868; of Port Arthur, Ont.; died in Ottawa, Ont., July 9, from cerebral hemorrhage.

Duncan MacFarlan, M.D. Hahnemann Medical College, Philadelphia, 1875; aged 63; died at his home in Philadelphia, September 26.

Charles C. Taggart, M.D. University of Maryland, Baltimore, 1887; aged 49; died at his home in Marshfield, Ore., September 11.

F. W. Max Klonk, M.D. Baltimore Medical College, 1894; aged 63; died at his home in Oakland, Calif., October 2.

John B. Foster (license, Mississippi, 1880), aged 76; died at his home in Vimville, Miss., September 22.

S. D. Bliss (license, Missouri, 1885), aged 89; of Aurora Springs, Mo.; died in Higginsville, Mo., August 13, from carcinoma of the stomach.

Ephraim A. Santee, M.D. Jefferson Medical College, 1869; aged 77; died at his home in Wapwallopen, Pa., September 16, from senile debility.

C. E. Cox (license, Indiana, 1898), aged 73; died at his home in Cannelton, Ind., August 13, from chronic parenchymatous nephritis.

William H. McDowell (license, Kansas, 1901), aged 71; died at his home in Iola, Kan., August 1, from cerebral hemorrhage.

Charles D. Ware, M.D. Medical College of Ohio, Cincinnati, 1888; died at his home in Bodie, Calif., September 18.

W. F. A. Edney (license, Arkansas, 1903), aged 65; died at his home in Abbot, Ark., July 7, from cerebral hemorrhage.

Emmet E. Whitaker (license, Arkansas, 1903), aged 44; died at his home in Riddle, Ark., July 21, from hemiplegia.

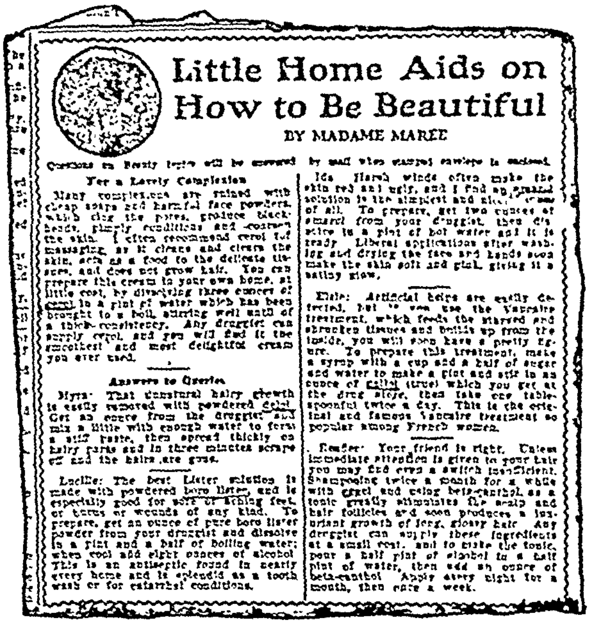
The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

SOME MISCELLANEOUS NOSTRUMS FOR EXTERNAL APPLICATION

AMAROL

Amarol is a so-called "complexion beautifier" advertised under the "prescription fakes" method. It has been exposed by various state health boards. According to the bulletin on "Medical Frauds" issued by the Indiana State Board of Health the stuff is put on the market by the F. W. Scharff Co., Chicago, and has the following composition:



Little Home Aids on How to Be Beautiful

BY MADAME MAREE

Questions on Beauty topics will be answered by mail when stamped envelope is enclosed.

For a Lovely Complexion

Many complexions are ruined with cheap soaps and harmful face powders, which clog the pores, produce blackheads, pimply conditions and coarsen the skin. I often recommend cerol for massaging, as it cleans and clears the skin, acts as a food to the delicate tissues, and does not grow hair. You can prepare this cream in your own home, at little cost, by dissolving three ounces of cerol in a pint of water which has been brought to a boil, stirring well until of a thick consistency. Any druggist can supply cerol, and you will find it the smoothest and most delightful cream you ever used.

Answers to Queries

Myra: That unnatural hairy growth is easily removed with powdered delol. Get an ounce from the druggist and mix a little with enough water to form a stiff paste, then spread thickly on hairy parts and in three minutes scrape off and the hairs are gone.

Lucile: The best lister solution is made with powdered boro lister, and is especially good for sore or aching feet, or burns or wounds of any kind. To prepare, get an ounce of pure boro lister powder from your druggist and dissolve in a pint and a half of boiling water; when cool add eight ounces of alcohol. This is an antiseptic found in nearly every home and is splendid as a tooth wash or for catarrhal conditions.

Ida: Harsh winds often make the skin red and ugly, and I find an amarol solution is the simplest and nicest cream of all. To prepare, get two ounces of amarol from your druggist, then dissolve in a pint of hot water and it is ready. Liberal applications after washing and drying the face and hands soon make the skin soft and pink, giving it a satiny glow.

Elsie: Artificial helps are easily detected, but if you use the Vancaire treatment, which feeds the starved and shrunken tissues and builds up from the inside, you will soon have a pretty figure. To prepare this treatment, make a syrup with a cup and a half of sugar and water to make a pint and stir in an ounce of [illegible] (true) which you get at the drug store, then take one tablespoonful twice a day. This is the original and famous Vancaire treatment so popular among French women.

Reader: Your friend is right. Unless immediate attention is given to your hair you may find even a switch insufficient. Shampooing twice a month for a while with eggol and using beta-canthol as a tonic greatly stimulates the scalp and hair follicles and soon produces a luxuriant growth of long, glossy hair. Any druggist can supply these ingredients at a small cost, and to make the tonic, pour a half pint of alcohol to a half pint of water, then add an ounce of beta-canthol. Apply every night for a month, then once a week.

An advertisement in the form of an Answers to Correspondents department. Each "answer" recommends a "patent medicine" put out by the Scharff-Cooper concern: "Amarol," "Cerol," "Delol," etc.

Epsom salt	95 per cent.
Borax	5 per cent.

The estimated value of the ingredients is 1 cent but it sells for one-half dollar. According to the advertising, Amarol will "make the skin soft and pink, giving it a satiny glow." The F. W. Scharff Co. operates from the same offices as the Cooper Pharmacal Co., "Valeska Suratt," etc.

ANTI-FRECKLE LOTION

This product, according to the Indiana State Board of Health, is put on the market by E. B. Gustin, Logansport, Ind. The Indiana chemists reported that it had essentially the following composition:

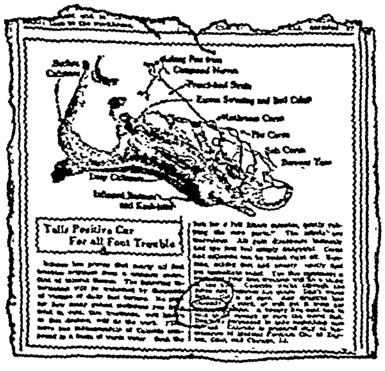
Bichlorid of mercury	1.5 per cent.
Alcohol	2 per cent.
Water	96.5 per cent.

According to the same authority the stuff retails for 50 cents, while the estimated value of the ingredients is 1 cent.

CALOCIDE

Advertisements of Calocide have described it as a "positive cure for all foot trouble." According to one advertisement, when Calocide is used:

> "All pain disappears instantly and the feet feel simply delightful. Corns and callouses can be peeled right off. Bunions, aching feet and sweaty, smelling feet get immediate relief."



Soft Corns
Deep Callouses
Tells Positive Cur
For all Foot Trouble

A typical advertisement of "Calocide."

This marvelous compound, which is also recommended for "frost bites, chilblain, burning, aching tender feet" is put on the market by the Medical Formula Laboratories of Dayton, Ohio, and Chicago. Various chemists have analyzed this preparation and their reports agree in essentials. The following are results reported by the state chemists of Connecticut:

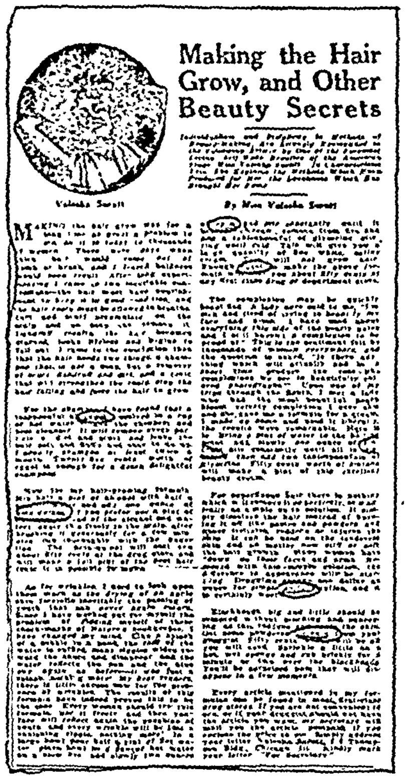
Common salt, about	22.44 per cent.
Borax, about	37.58 per cent.
Alum, about	39.35 per cent.
Tannin	Small amount

Dr. Harvey W. Wiley, who has also analyzed the preparation, states in the book "1001 Tests" that Calocide "might be very drawing and drying to the feet, undesirably so under some conditions."

CEROL

Cerol is another preparation sold on the "prescription fake" method and marketed by the Scharff-Cooper concern, that puts out Amarol, etc. According to an advertisement published in the form of an "Answers to Correspondents" department entitled "Little Home Aids on How to be Beautiful by Madame Maree" Cerol "cleans and clears the skin" and also "acts as a food to the delicate tissues." Various reports from boards of health assign to Cerol the following composition:

Boric acid Stearic acid Perfume



Making the Hair Grow, and Other Beauty Secrets

Valeska Suratt

"Valeska Suratt, Thompson Bldg., Chicago," is a name used by the Cooper Pharmacal Co. in exploiting its nostrums, "Eptol," "Eggol," etc.

CLEAROLA

Clearola is said to be put on the market by G. W. Carpenter, Jaffrey, N. H. It is sold as a preparation which will "whiten the skin" and has been reported on by the state chemists of Indiana, Ohio and Kansas. They all agree in declaring that Clearola is nothing more mysterious than ordinary sulphur.

CUTICLE ACID

This product, put on the market, apparently, by Richard Hudnut of New York is said to "remove dead skin." According to the Kansas State Board of Health Bulletin for August, 1914, Cuticle Acid is mostly water with:

Alcohol	10 per cent.
Oxalic acid	2 per cent.

DERMA-ROYALE

Derma-Royale emanates from the Derma-Royale Co. of Cincinnati. Some years ago it was advertised under such claims as:

> "Cures Eczema and Tetter."
> "Absolutely and permanently removes Blackheads, Freckles, Pimples, Redness, Sun spots and Tan."

The present claims, while not so definite, are no more modest. According to the state chemists of Connecticut, as given in their report for 1914: "This preparation is a dilute alcohol-glycerin solution with small amounts of camphor, myrrh, benzoin and possibly other aromatics in suspension."

EPTOL

"There is little excuse now for the presence of wrinkles. The results of this formula have indeed proved this to be the case. Every woman should try this formula, use it freely and then your face will reflect against the sunshine of youth and every wrinkle will be just a vanishing ripple, nothing more!" Thus, to the gullible, appeals the Cooper Pharmacal Company of Chicago in a fake "Beauty Secrets" department published under the name of "Miss Valeska Suratt." The "formula" referred to is Eptol, plus some glycerin and water. Eptol is a white powder perfumed with rose which sells for 50 cents for a 1½-ounce box. According to the state chemists of Connecticut, Eptol has essentially the following composition:

Borax	37 per cent.
Soap and stearic acid	63 per cent.

FATOFF

Fatoff is supposed to be the "discovery" of one Mary S. Borden and is put on the market by the M. S. Borden Co. of New York City. According to a booklet put out by the concern, "Fatoff has been granted a patent." We find from the patent records that Mary S. Borden of New York City was granted a patent on what she termed a "toilet cream." The patent specifications give the following composition of this product:

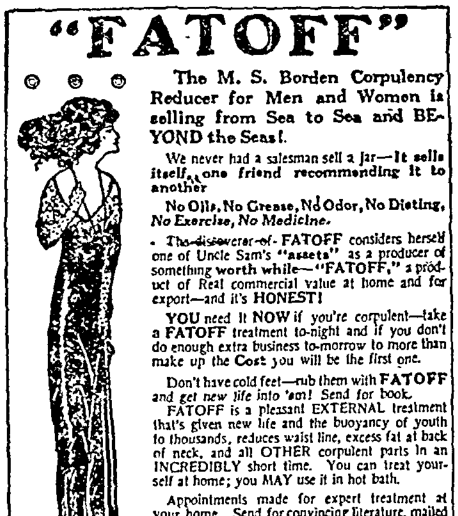
Water	14 lbs.
Washing soap	6 oz.
Extract of bladder-wrack	1 oz.
Washing soda	1 oz.
Potassium carbonate	135 grains
Thyroid gland of sheep	30 oz.
Tincture of iodin	¼ oz.
Perfume	½ oz.

The patent specifications do not give any indication that the preparation is to be used for the reduction of weight; in fact Mary S. Borden states specifically:

> "The object of my invention is to provide or produce a new and useful composition, which, when applied to the skin, will protect the covered part from the air and at the same time operate as a cleanser or purifier for the removal of foreign matters or accumulations."

Elsewhere in the patent specifications, however, Mrs. Borden speaks of the use of her toilet cream "to secure *other* and *further* useful results." [Italics ours.—Ed.] Naturally, there would be no object in using bladder-wrack, thyroid, tincture of iodin, etc., in an ordinary toilet cream sold for cleansing and protective purposes only. All of these drugs, however, are more or less common ingredients in so-called "obesity cures." Some time ago the government published a report in which the federal chemists had the following to say about M. S. Borden's "Fatoff":

> "Analysis shows that the product is a paste made of soap and water containing 10 per cent. soap and 90 per cent. water."



"FATOFF"

The M. S. Borden Corpulency Reducer for Men and Women is selling from Sea to Sea and BEYOND the Seas!

We never had a salesman sell a jar—**It sells itself, one friend recommending it to another**

No Oils, No Grease, No Odor, No Dieting, *No Exercise, No Medicine.*

~~The discoverer of~~ FATOFF considers herself one of Uncle Sam's "assets" as a producer of something worth while—"FATOFF," a product of Real commercial value at home and for export—and it's HONEST!

YOU need it NOW if you're corpulent—take a FATOFF treatment to-night and if you don't do enough extra business to-morrow to more than make up the Cost you will be the first one.

Don't have cold feet—rub them with FATOFF and *get new life* into 'em! Send for book.

FATOFF is a pleasant EXTERNAL treatment that's given new life and the buoyancy of youth to thousands, reduces waist line, excess fat at back of neck, and all OTHER corpulent parts in an INCREDIBLY short time. You can treat yourself at home; you MAY use it in hot bath.

Appointments made for expert treatment at your home. Send for convincing literature, mailed *free in plain sealed wrapper.*

FATOFF FOR DOUBLE CHIN (a chin reducing wonder).

Special Size, **$1.50**

FATOFF (Full Size) **$2.50**

At leading druggists throughout the country or

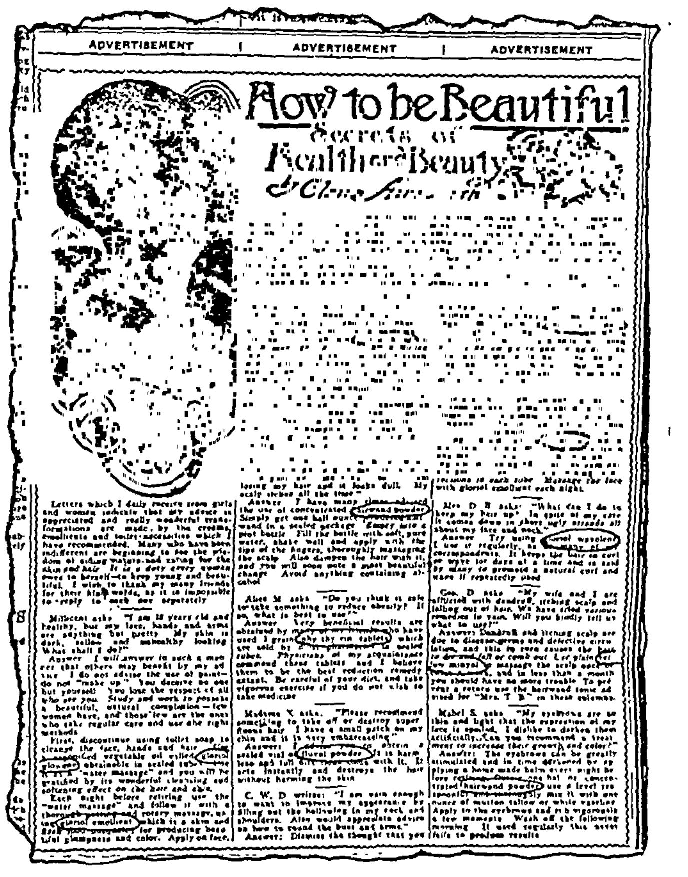
M. S. BORDEN COMPANY

NEW YORK CITY

The Indiana State Board of Health in its bulletin on "Medical Frauds," issued in 1914, states that Fatoff is essentially "soft-soap." It declares further, that while the selling *price of this preparation is $1.50 the value of the ingredients* is 5 cents. From the facts submitted it would seem that, while originally Fatoff may have contained such drugs as thyroid, bladder-wrack, *iodin, etc., it no* longer has these drugs in it. Why should it? It is just as easy to fool the obese with a soft-soap mixture sold under a fancy name at a fancy price as it is to humbug them with a more elaborate product—and the profits are greater!

GLORIOL BALM

This is one of a large group of nostrums put on the market by the Blackburn Products Company, a concern run by two men, one of whom is said to have been in the advertising business and the other in the cigar trade. The Prescription Products Company and the Lesslie Company are two other names under which the same men do business. Gloriol Balm is apparently put out under the name of the Lesslie Company. The advertising is done largely by the "prescription fake" method, usually under the title "The Doctor's Advice by Dr. Lewis Baker" although sometimes by means of an "Answers to Correspondents" department entitled "How to be Beautiful, Secrets of Health and Beauty by Claire Ainsworth." Gloriol Balm is a toilet cream of the "vanishing" type. It is said to "make the skin smooth and clean." It is found listed among medical frauds in the bulletin on this subject issued by the Indiana State Board of Health. According to the Indiana chemists it has the following composition:



ADVERTISEMENT | ADVERTISEMENT | ADVERTISEMENT

How to be Beautiful

Another fake Answers to Correspondents department. The "answers" here recommend "patent medicines" or toilet articles put out by the Blackburn Products Co., of Dayton, Ohio, or of one of its subsidiary concerns.

Stearic acid, soap and borax	23.7 per cent.
Water	76.3 per cent.

GLORIOL GLOWENE

This preparation is put out by the same concern as Gloriol Balm and is advertised by the same methods. According to one advertisement appearing in a fake "Answers to Correspondents" department:

> "Soap is a destroyer of a beautiful skin and I want all my fair readers to discontinue its use. Instead use Gloriol Glowene which is *really* a water massage. . . ."

According to the state chemists of Indiana, of Kansas and of Michigan, "Gloriol Glowene" is soft soap!

ZEMO

Zemo (E. W. Rose Medicine Company, St. Louis, Mo.) is sold as "A Preparation for the Treatment of Eczema, Pimples, Dandruff and Similar Affections of the Skin and Scalp." While, in accordance with the requirements of the Food and Drugs Act, the manufacturer admits the presence of 35 per cent. alcohol in his product he gives no further information regarding its composition. Some of the claims that have been made for this preparation, through the medium of those newspapers that are willing to cater to this sort of business, are:

> "There is nothing known that will stop itching like Zemo."
>
> "You simply apply it on the afflicted part . . . all eczema sores and pains, prickly heat, rash, tetter, inflamed or reddened skin, all disappear."
>
> "It also cures dandruff, which is scalp eczema."
>
> "Every form of Scalp Disease Cured Quick by Zemo."

As is the case with many of the "patent medicines" sold for external application, Zemo is used as a "come-on" for the purchase of another nostrum put out by the same company: "If your case does not readily yield to Zemo use Zemotone, which is primarily a blood tonic and purifier. . . ." Then there are "Zemo Laxative Pepsin Tablets" and "Zemo Soap." The purchaser is told, too, that "if after using Zemo freely the trouble appears worse it indicates that Zemo is *drawing out the germ life.*"

A specimen of Zemo was purchased on the open market and turned over to the Association's laboratory for analysis. An abstract of the chemists' report follows:

> One original bottle of Zemo, manufactured by the E. W. Rose Medicine Co., St. Louis, was submitted to the Chemical Laboratory for examination. The bottle contained a brown fluorescent liquid, acid to litmus. The amount of alcohol was 28.35 per cent. absolute alcohol by volume. Alkaloids, heavy metals and iodids were not found. From the result of the tests made, it would appear that Zemo is a watery-alcoholic solution containing methylsalicylate, thymol, borax, tannic acid, glycerine, menthol and a phenol-like body.

With the veil of secrecy torn aside by the chemists, Zemo stands exposed as a very ordinary mixture sold under misleading and fraudulent claims.

THE PROPRIETARY EVIL FROM A LAY VIEWPOINT

The New York Sun Warns the Public to Shun the Proprietary-Prescribing Physician

In an address delivered before the alumni of the College of Physicians and Surgeons by Prof. Francis Carter Wood, as reported in the *Sun*, the doctor points out that the love of the mysterious is the chief element in the popularity of quack remedies, ranging from the scorched cat's whiskers to the "latest synthetic drugs from Germany." The doctor made facetious reference to the confidence in the new-fangled remedies, without, however, solemnly warning against their use. Derivatives mostly from coal tar and chiefly composed of antipyrin, antifebrin combinations are the most vicious form of empiricism. But the young graduate prescribes them because some young, doubtless well-paid docent has written a certificate to testify to their curative value, because, forsooth, he has tried them on animals, a kind of experimentation to which the student is accustomed to look for enlightenment.

The *Sun* has endeavored to impress on its readers the fallacy, if not the danger, of accepting prescriptions from doctors who, too indolent or unscientific to think out their own prescriptions, write for "Kill or Kurem's" Hydrated Phosphate Compound, or C., D. & X. Company's "Diostenin," or "Professor Chadelle's Cresolated Compound," the composition of which they either do not know at all or accept from the manufacturers. The chief aim of the latter naturally is to popularize these preparations by leaving samples at the doctor's office or offering them in generous quantities for the mere cost of a postal card. This injustice and danger to the lay patient will never be removed, because the medical journals with but a very small exception advertise these preparations, the value and uses of which the manufacturers, with the most brazen effrontery, offer to teach the doctor who will listen.

In looking over the advertising pages of one of the most respectable medical journals, to which our best physicians do not hesitate to contribute, we find in its last issue not less than eighteen proprietary medicines, mostly native, which Dr. Wood did not mention.

As we have repeatedly urged, it rests with the general public to protect itself against lazy or indifferent doctors and their dangerous empiricism by examining their prescriptions and refusing to use any that are written for a medicine that bears the name of the manufacturers or is purchasable in original packages. If in doubt, any one may, by copying the name of the article suspected, ascertain from the druggist before showing the prescription if the medicine prescribed may be bought "by the bottle." Lest this method be regarded as unwarranted, let it be considered that we trust the doctor because we know him and that this trust is misplaced if he prescribes a drug the composition of which he does not know.

Another point suggested by this address is the fact that when Professor Wood said that "the remedy for the love of the mysterious is education," and when he praised the campaign being inaugurated by physicians through bulletins of medical societies and public health officers, "which will abate somewhat the density of popular ignorance," he lost sight of the far more potent influence of those newspapers which devote space to approving comments on these publications and print original articles on the subject, as has been done for many years by the *Sun*, that would never otherwise reach the public.—Editorial, New York *Sun*, Oct. 7, 1915.

Correspondence

American Salvarsan

To the Editor:—It may interest you to know that, in the course of chemotherapeutic researches which Dr. Raiziss, Dr. Kolmer and myself have carried out in the Dermatological Research Department of the Philadelphia Polyclinic during the past year or more, we have reproduced salvarsan and have made a number of new arseno-benzol products. We have given over 100 injections of our salvarsan to hospital patients with excellent therapeutic results and with no untoward effects.

I understand that the supply of salvarsan in this country is exhausted and that the American agents do not know when the drug can be imported from Germany. The American patents are held in the name of Ehrlich and Bertheim, but have doubtless been consigned to the manufacturing company of Lucius and Brüning of Frankfort, Germany.

As salvarsan is necessary to save life as well as to prevent the spread of syphilis, it is eminently desirable that this country should not be deprived of the drug. We could not supply salvarsan to the medical profession at the present time without infringing the existing patent rights of the Frankfort company. To have the patent laws amended would doubtless require congressional action. Should we be permitted to supply the drug to the profession, I think we could offer it at one third of the price which it has recently commanded. All profits accruing therefrom would be devoted to the establishment of a permanent fund for further scientific research.

If you think it desirable to bring this matter to the attention of the Board of Trustees of the American Medical Association, I shall be glad to furnish you with any further information that you might desire.

J. F. SCHAMBERG, M.D., Philadelphia.

[NOTE.—Bearing on the subject-matter of Dr. Schamberg's letter are the following resolutions, which were unanimously adopted by the House of Delegates of the Medical Society of the State of Pennsylvania in session in Philadelphia, Sept. 22, 1915:

> *Whereas*, An important drug, necessary for the cure of disease and likewise the prevention thereof, is no longer available to the medical profession of this country by reason of the European war, and
>
> *Whereas*, This drug has been produced in this country, but cannot be supplied to physicians because its manufacturer is protected by patents, therefore, be it
>
> RESOLVED, By the Medical Society of the State of Pennsylvania that the Secretary of the Interior or the Commissioner of Patents be respectfully urged to call upon the patentees to supply this drug or permit the same to be supplied by others, or to take such other means as his judgment may dictate to relieve the existing condition.

—ED.]

Sixteenth Century Medical Poets

To the Editor:—The following stanzas by Dr. John Halle, written in 1564, were given me by Dr. George Dock of St. Louis in 1905. To the best of my recollection, Dr. Dock found them while browsing about among the old book shops of London, during the preceding summer. The verses contain much good advice applicable to medical practice today.

I have been unable to trace the history of John Halle. His name is not mentioned in the "Biographical Memoirs of the Most Celebrated Physicians and Surgeons" by Pettigrew, published in London about 1840. I have understood that he was the Dr. John Halle who married the eldest daughter of William Shakespeare. She was born in 1583. The verses were written in 1564, nineteen years before her birth, which would throw some doubt, although it would not contradict, this historical statement. As a commentary on gentlemanly conduct and medical ethics of the sixteenth century, I trust the verses will prove interesting to your readers.

WILLARD J. STONE, M.D., Toledo, Ohio.

GOODLYE DOCTRINE AND INSTRUCTION

By John Halle, 1564

When thou arte callde at anye time,
A patient to see;
And doste perceave the cure to grate,
And ponderous for thee:

See that thou laye disdeyne aside,
And pride of thyne owne skyll:
And thinke no shame counsell to take,
But rather wyth good wyll.

Gette one or two of experte men,
To helpe thee in that nede;
And make them partakers wyth thee,
In that worke to procede.

For in so doinge, thine honestye
Thou shalte well kepe and save;
Also thy patiente thereby
Right greate comforte shall have.

By thys meanes thou mayste haplye learne,
Ryghte seldome sene before;
Of thee, or hym, whych fyrste thee taughte,
Though thou have cunnynge store.

And also if oughte goe a wrye,
Or hinder in thy cure,
The one maye mende the others faulte,
While friendship dothe endure.

The wounded or sore man also,
Shall have no cause to grudge
In you suche uniformitye,
Whyle he maye see and judge.

But one thinge note, when two or moe
Together joyned be;
Aboute the paynfull patient,
See that ye doe agree.

See that no discorde doe arise,
Nor be at no debate;
For that shall sore discomforte hym,
That is in sycke estate.

For noughte can more discomforte him,
That lies in griefe and peyne,
Then heare that one of you dothe beare
To other suche disdeine.

Wherefore what so ye have to saye,
In thinges about your arte;
Let it be done among yourselves,
In secrete and a parte.

With one consent uniformlye
Comforte the wounded man;
But unto some good frende of hys
Express all that ye can.

See thou dispraise none other man
His error though thou knowe;
For sure an other for thy plage,
Shall then like curtyse showe.

[COMMENT.—Dr. Stone seems to have somewhat confused Dr. John Halle with Dr. John Hall.

John Hall, who was born in 1575 and died in 1635, married Susanna Shakespeare, June 5, 1607. He is reported to have been a medical man of more than the average knowledge and ability, and was deservedly held in high esteem. Dr. Hall could not have been the author of the poem printed above if it was written in 1564. He was, however, the author of a book of which the following description occurs in the Surgeon-General's Index:

> Select observations on English bodies; or, cures, both empericall and historicall, performed upon very eminent persons in desperate diseases. irst written in Latine by . . . living at Stratford upon Avon in arwick-shire, where he was very famous, as also in the counties adja-[illegible], as appeares by these observations drawn out of severall hundreds of his, as choysest. Now put into English for common benefit by James Cooke.

Dr. John Halle was borne in 1529. His biography is published in J. Aikin's "Biographical Memoirs," London, 1780, p. 181. In a series of articles on Archaeologia Anatomica by E. Barclay-Smith, published in the *Journal of Anatomy and Physiology*, 1900, xxxiv, 275, his work is especially discussed. He is the author of a book thus described in the Surgeon-General's catalogue.

> An historicall espostulation against the beastlye abusers, both of chyrurgerie and physyke, in oure tyme: with a goodlye doctrine and instruction, necessarye to be marked and followed of all true chirurgiens.

It is probable that the poem printed above is a portion of this work. Barclay-Smith states that:

> The "Compendious work of Anatomie, more utile and profitable than any heretofore in the Englyshe tongue publyshed," annexed to Mr. John Halle's "A most excellent and learned woorke of Chirurgerie," is perhaps the earliest anatomical treatise written by an Englishman, and published in England, now existent, but Halle is far from being the earliest English anatomical writer of whom we have record.

So far as can be determined, the first edition of his work has disappeared completely.

Barclay-Smith states that Halle, like many writers of his age, was bitten with an inexpressible desire to sing. He bursts into poetry on the slightest provocation. The following poem is quoted:

But chieflye the Anatomye
Ye oughte to understande:
If ye will cure well anye thinge,
That ye doe take in hande.

For by the same above the reft,
Ye shall greate fame deserve,
The life of many from manye streightes,
To save and well preserve.

Without the knowledge of whyche arte,
Thou canste not chose but erre:
In all that thou shalte goe aboute
Thy knowledge to preferre:

As if ye cutte or cauterize,
Or use Phlebotomye:
Ye can not but erre in the same,
Without Anatomye.

He is no true Chirurgien
That cannot shewe by arte,
The nature of eurye member,
Eche from other aparte.

For in that noble handye worke,
There dothe nothinge excell,
The knowledge of Anatomye,
If it be learned well.

Endeoure therefore by all meanes,
The same to knowe and cunne,
For when thou haste it perfectlye,
Thine arte is halflye wunne.

For thereby shalt thou understande,
Of eche member in dede,
Their nature and their offices,
And howe they doe procede.

And unto what good use they serve,
As well the leaste as moste,
And by their hurte Prognosticate,
What action will be loste.

Whereby of knowledge and greate skill,
Thou shalt obteine the brute,
And men to thee in generall,
For helpe shall make their sute.

Wherfore all honour, laude and praise,
To God ascribed be,
The Father, Sonne, and holye Ghoste,
One God and personnes three.

—ED.]

The Fate of Bone Transplants

To the Editor:—We have received a letter from Dr. C. A. McWilliams of New York, complaining that our Conclusion 2 on experimental bone work (THE JOURNAL, September 18) was unfair, in that it implied that because of lack of sufficient contact and immobilization, his wounds *suppurated*.

We hasten to correct this impression, as if this interpretation were put on the conclusion it would be manifestly unfair to Dr. McWilliams.

Exactly what we meant was that there was not sufficient contact and immobilization in his dog experiments, and not sufficient contact in his three clinical cases to secure primary union between the transplant and parent bone.

So far as other criticisms of the article by Dr. McWilliams are concerned, they pertain to the scientific value of the contribution, and will be answered at another time if need be.

We hope that the foregoing explanation will make the conclusion plain. W. L. and C. P. BROWN, El Paso, Texas.

[The foregoing letter was referred to Dr. McWilliams who replied:]

To the Editor:—The original article by Brown and Brown is loosely put together, for most authorities consider "free" grafts to be nonpedicled grafts in contradistinction to pedicled grafts (either temporary or permanent). Brown and Brown evidently use the term "free grafts" to mean *noncontacting grafts*, but without any explanation of this fact, as one has to go through the article to learn what is meant. The authors have explained in the preceding letter their use of the term "primary union" in Conclusion 2. Universal application of the term "primary union" makes these words refer to the absence of infection. Brown and Brown have found a new use for these words.

As for the criticism of the lack of sufficient contact and immobilization in my animal and clinical cases to secure "primary union" between the transplant and the parent bone, if we grant, for the sake of argument, that these were insufficient, then these grafts died because of the lack of periosteum, for they evidently had not sufficient life in themselves to live and they could not get nourishment from the lack of contacting points. If, on the other hand, periosteum had been on these grafts, they would all have lived despite the pretended lack of contact and immobilization for there are almost no reported failures of transplants made *with* periosteum. Grafts *with* periosteum have been proved by many to be living entities in themselves and do not need contact with living bone to maintain their own life, e. g., Gill (*Ann. Surg.*, June, 1915) has proved that neither contact nor immobilization is absolutely necessary for the life of the grafts, if periosteum be on them, for he transplanted the entire metatarsal bone with periosteum from one leg of a dog to the other leg. There was no bony contact and no immobilization in any one of the cases, yet five transplants lived perfectly for eight months after the transplantations despite suppuration in all but one case. These transplants are all perfectly normal in appearance. Barth was the originator of the theory that contact is necessary for the life of grafts, but in 1908 he entirely repudiated his original ideas and came to believe that periosteum was the necessary element in their life. Murphy is the sole defender of the contact idea, now backed up by Brown and Brown, but Murphy has never advanced any proofs to support the theory. Whether Brown and Brown have done so is left to the judgment of the profession. In addition there are numerous human transplantations of metatarsals and phalanges of the foot into the metacarpals and phalanges of the hand, which have succeeded perfectly without any bony contact being made. These cases absolutely invalidate the contact theory.

C. A. McWilliams, M.D., New York.

The Relation of Selective Tissue Affinity to Infection

To the Editor:—Your recent editorial on this subject (The Journal, Sept. 25, 1915, p. 1114) would seem to open up the path for important clinical progress. If a pneumococcus which has an affinity for the lungs is grown on artificial mediums, it loses this specificity and is apt to locate in other tissues. It has really become another strain. This selective affinity may be assumed to be due to the fact that the toxins of the particular organism in question are especially toxic to this tissue, and having lowered its resistance, grow there with greater freedom, or that certain tissues themselves do not resist the invasion of these strains, or both.

It would seem that a vaccine produced on artificial mediums would be from necessity another strain, and even though it be an autogenous vaccine, its characteristics would probably differ somewhat. By the use of vaccines prepared from cultures grown on mediums containing homologous tissue extracts, the specificity of the culture would be maintained and a greater number of antibodies produced. For instance, a pneumococcus vaccine intended for use in pneumonia could be prepared from cultures grown on mediums containing extracts of lung tissue. A vaccine to be used in pyelitis could be prepared from culture mediums containing an extract of kidney tissue. This would raise the resistance of the particular tissue involved and produce a vaccine with the same characteristics as that of the invading organism. This theory would naturally have its limitations, but in certain fields would open a new door in vaccine therapeusis.

E. L. Ward, M.D., Santa Fe, N. M.

Progress.—The drama of progress, whether displayed in the evolution of living things or in man's age-long struggle to comprehend the world of which he is a product, stirs the imagination by a warmer appeal. Without it we should miss something that we fain would keep.—E. B. Wilson, *Science*.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will *not* be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

LENGTH OF GESTATION IN ECTOPIC PREGNANCY

To the Editor:—Recently I assisted in an operation for ectopic pregnancy in which the uterus was empty and showed no signs of rupture. The child was alive, fully developed and weighed 9 pounds. The mother claims she was always regular with menstruation and there was never amenorrhea until this, her first pregnancy. She claims further that she has been pregnant fifteen months up to the time of this operation and had felt life for nine months. Can you inform me how many cases are on record in which a child remained alive in ectopic pregnancy longer than nine months? The operation was performed two months ago; mother and child are still doing well.

L. T. H., Idaho.

Answer.—It is well known that the duration of pregnancy frequently exceeds 280 days. Of course the exact duration is never known because there is always uncertainty as to the date of the beginning of pregnancy. Even when there is a single coitus the time of fertilization may be delayed, possibly several days. Numerous cases of pregnancy lasting about 302 days are on record and a few cases between 330 and 336 days are accepted as reliable. No credible reports of gestation prolonged more than 349 days are extant.

Such a report as is given by our correspondent can make no claim to credibility. The mother's assertion that she was pregnant fifteen months or that she had felt life nine months means nothing to the reader of the report. Every pertinent part of the personal and family history bearing on the reliability of the patient should be given. The exact dates of menstruation, cohabitation, nausea, symptoms of disturbance from extra-uterine pregnancy, etc., as far as possible should be stated; likewise the exact weight and length of the child, as well as the state of the development of the bones, should be recorded.

While there are numerous reports of cases of abdominal pregnancy with the child living at term, there are very few in which the child lived beyond the usual term of gestation. Uterine contractions generally occur, accompanied by contractions in the extra-uterine fruit sac, and the child dies. Parry ("Ectopic Gestation," 1876) reports a case of twins, one intra-uterine the other extra-uterine, in which the patient felt the movements of the extra-uterine child seven weeks after the birth of the uterine child. He also cites a case from Grassi, who claims to have felt the fetal movements in a case of abdominal pregnancy twenty-three months after cessation of the menses. These reports are good illustrations of interesting medical gossip that have no claim to scientific credence.

The following references may be quoted:

Cushing, E. W.: A Case of Extra-Uterine Pregnancy; Operation at Ninth Month; Recovery, *Am. Gynec. and Pediat.*, 1890-1891, iv, 214.

Dalton, H. C.: Ectopic Pregnancy Operated on at Full Term; Recovery, *Tr. Med. Assn. Missouri*, 1898, xi, 91.

Rafferty, T. M., and Rafferty, H. N.: Operation at Term with Living Child, *Med. Rec.*, New York, 1901, lx, 472.

Root, E. F.: Living Child by Operation at End of Term in Extra-Uterine Gestation, *Am. Surg. and Gynec.*, St. Louis, 1902, xvi, 204.

Urbain, A.: Grossesse extra-utérine à terme; opération; enfant vivant, *Bull. Soc. belge de gynéc. et d'obst.*, 1893, iv, 130.

Horsley, J. S.: Abdominal Pregnancy with Living Child, *Surg., Gynec. and Obst.*, July, 1913.

Himmelsbach, W.: Case of Abdominal Pregnancy, *California State Jour. Med.*, December, 1914.

Lewis, D. G.: Abdominal Pregnancy; Eight and One-Half Months' Gestation; Eclampsia; Celiotomy; Recovery of Mother; Child Lived Three Days, *Washington Med. Ann.*, 1907-1908, vi, 315.

FORMATION OF ALCOHOL DURING DIGESTION—ITS OXIDATION BY THE LIVER—EXTENT OF ACIDITY IN HYPERCHLORHYDRIA

To the Editor:—1. Is alcohol formed in the process of digestion?

2. Is it broken up in the liver?

3. In marked cases of hyperchlorhydria does the acid as such continue in the intestines?

H. A. M., Philadelphia.

Answer.—1. A trace of ethyl alcohol appears to be present in the ileum and probably also in the large intestine during digestion and absorption. It is commonly held that this alcohol is the product of bacterial fermentation of the carbohydrates of the food rather than due to the action of the digestive ferments of the pancreatic and the intestinal juices. But this point is still unsettled. It is indeed, possible that the trace of alcohol present in the intestine is excreted from the blood. A trace of ethyl alcohol seems to be present in the blood of normal persons, even when no alcohol is ingested, and when the absorption of alcohol from the digestive tract is excluded. This trace of ethyl alcohol in the blood is, therefore, a product of tissue metabolism. It is well known that alcohol, once in the blood, is eliminated through all the secreting and excreting organs, including the intestinal mucosa.

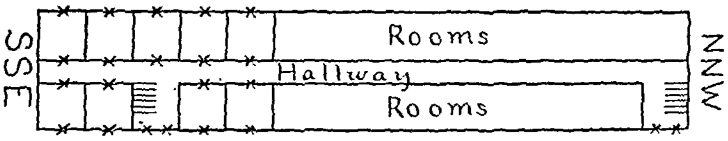
2. There is little or no evidence that the liver oxidizes ethyl alcohol with greater rapidity than do the other organs in the body. It is probable that all the body tissues are capable of oxidizing ethyl alcohol. Experimental work along this line has been concerned with the question whether or not the alcohol is really burnt in the body, and in what way this affects metabolism, rather than with the question as to which particular organ is responsible for the oxidation.

3. In cases of persistent hyperacidity there is hypersecretion. The contents of the duodenum are acid; pylorospasm then occurs, keeping the remaining food in the stomach until sufficient pancreatic juice is secreted to neutralize the acid contents of the duodenum.

VENTILATION

To the Editor:—There is a floor in a school dormitory in this place which approximates this sketch. It is the top floor of a four-story building, and has no overhead ventilation in the hall; therefore all the ventilation is by way of the windows in the rooms and the two staircases. In every instance the window is exactly opposite the door, both being stock size. The rooms are 12 by 12 by 9. There is no method of artificial ventilation in the building, no way of forcing air in or out. The ends of the hall are closed, so that there is no north and south ventilation at all. The building is on a hill to the south of the town, and there are not a dozen residences, and no factories, etc., within a quarter of a mile.

These top floor rooms have been heretofore used for the accommodation of but one pupil, but this year the number of applications exceeds the room-space of the college, and the question of putting two girls to a room on the top floor is being considered. Considered from the standpoint of ventilation, would this be permissible? The average age of the pupils is about 15 or 16.



Sketch of school dormitory; the crosses indicate the location of windows and doors.

Now please don't say that each individual requires 3,000 cubic feet of air an hour and that about 2,500 feet can be passed without perceptible draft through a space of 424 feet, or that in large halls 300 feet per individual is sufficient. I know all that and all the other things about ventilation that do not do me a bit of good. I have to solve a concrete proposition. All girls will not keep their windows open, and in this case it is useless to talk about installing a system of forced ventilation. I know too that on a windy day, if all the windows were opened, you would find it delightful on that floor. The question is, Should I permit them to put two girls in one of those rooms? E. F. Howard, M.D., Vicksburg, Miss.

Answer.—Recent scientific investigation has shown that the bad hygienic effects of an insufficient air supply are dependent on heat stagnation in the body and not on chemical impurity in the air. The easiest and most available method of carrying away the body heat is by means of moving air. Therein lies the chief purpose of ventilation. It is not a question of the quantity of fresh air supplied, but of the quantity of heat that it is capable of carrying away. Hence temperature is also of much importance. If this does not rise above 68 or 69 F., relatively small amounts of air will answer the purpose and no ill effects will be observed. If it goes much above 70, then larger quantities are demanded and some artificial device for maintaining motion becomes necessary.

With these principles in mind we are justified in saying that there should be no objection to placing two girls in a room 12 by 12 by 9 feet and laid out according to the accompanying sketch. The cubic space is quite enough to answer all practical purposes, and the arrangement of doors and windows is such as to make efficient ventilation probable. It is not stated whether the doors are fitted with transoms. It is to be hoped that they are, since such an arrangement will aid materially in the freedom of air movement in and out of the room. As a practical suggestion, it is proposed that the windows of these rooms be supplied with snugly fitting 2-inch boards placed on the sill so that the lower sashes rest on them. This will maintain an open crevice between the upper and lower sashes and secure a ready entrance for air from without. The pupils should be taught that the maintenance of such a crevice may be of value to them.

Recent literature bearing on the principles of ventilation is to be found in the following:

Hill (and others): The Influence of the Atmosphere on Our Health and Comfort in Confined and Crowded Places. Smithsonian Miscellaneous Collections, 1913, Publication 2170.

Lee: Fresh Air, *Pop. Sc. Month.*, April, 1914.

Winslow (and others): Results of the First Year's Work of the New York State Commission on Ventilation, *Am. Jour. Pub. Health*, 1915, v, 85.

Crowder: On the Reinspiration of Expired Air, *Arch. Int. Med.*, October, 1913, p. 420.

TESTS OF PANCREATIC SECRETION

To the Editor:—Please describe the following tests in full:

1. Fulde-Gross stool test of the external secretion of the pancreas.
2. Wohlgemuth's urine test of the external secretion of the pancreas.
3. Volhard's oil gastric test of the external secretion of the pancreas.
4. Loewi pupillary dilatation test.

J. W. Shuman, M.D., Sioux City, Ia.

Answer.—1. The Fulde-Gross trypsin determination method depends on the fact that casein, undigested, is precipitated by acetic acid, while digested casein is not. The estimation is made in units, one unit representing the ability of 1 c.c. stool filtrate to digest 1 c.c. of starch or casein solution.

Fecal solutions of 1:10, 1:100 and 1:1,000 are made and poured into nine test tubes as follows: First three tubes: 1:10 solution, 2, 1 and 0.5 c.c. starch solution 1 per cent., or casein solution 1:1,000. Second three tubes: 1:100 solution, 2, 1 and 0.5 c.c. Third three tubes: 1:1,000 solution, 2, 1 and 0.5 c.c. To each tube are added 5 c.c. of 1 per cent. soluble starch solution or 1:1,000 casein solution. The tube showing digestion, that is, no reaction, by the weakest fecal solution after twenty-four hours' incubation, is taken as the index of digestion. The casein reagent is acetic alcohol (1 per cent. acetic acid may be used); the starch reagent is Lugol's solution.

If a tube containing 1 c.c. of 1:1,000 fecal dilution is the greatest dilution which can digest 5 c.c. starch or casein solution, then 1 c.c. of undiluted fecal filtrate would be able to digest 5,000 c.c. starch or casein solution. This represents 5,000 units. The average normal reading is from 500 to 1,000.

2. Wohlgemuth's method is based on the extraction of a weighed portion of feces with a 1 per cent. sodium chlorid solution and the determination of the amylolytic activity of gradually decreasing volumes of this centrifugated extract, by means of a series of tubes in each of which 5 c.c. of 1 per cent. soluble starch is used as a substrate. After twenty-four hours at 38 C. (100.4 F.) the tubes are treated with a solution of iodin, and the extent of digestion determined colorimetrically. According to Hawk (*Arch. Int. Med.*, October, 1911, p. 553), this method does not yield dependable results when the stools are markedly acid. In his article he gives a modification to overcome this difficulty.

As applied to the urine, this is a test of diastase, 1 c.c. of urine being allowed to act on starch solution. Corbett found that the amount of starch-reducing ferment passed in twenty-four hours is fairly constant, the *d* value or index being 10 to 20 units, each unit representing 1 c.c. of 0.1 per cent. starch solution converted into dextrin in half an hour by 1 c.c. of urine. High readings are found in cases of pancreatic disease, in certain infective conditions and in some forms of eclampsia.

3. Volhard's method is based on the fact that normally there is a slight regurgitation of pancreatic juice into the stomach. The patient receives 1 gm. of magnesium oxid (calcined magnesia), half an hour later 200 c.c. of olive oil or 250 c.c. of sweet cream, and half an hour later again 1 dram of magnesium oxid. The stomach is emptied forty-five minutes later and the Gross method for the examination is carried out. According to Brugsch, the negative findings of trypsin are conclusive only in case erepsin is present.

4. Loewi's test consists of the instillation into the eye of a 1:1,000 epinephrin solution. If dilatation of the pupil takes place within an hour, the test is positive. In cases of pancreatic inefficiency, and occasionally in exophthalmic goiter, the test is positive. Beyond the fact that in these cases there is increased susceptibility of the sympathetic system to stimulation by epinephrin, there is no available explanation of the reaction. It is, of course, necessary to ascertain that the cornea is intact.

SOMNOFORM

To the Editor:—What is the present status of Somnoform as an anesthetic for minor operative procedures and what is its mortality rate in comparison to gas, ether and chloroform? X. Y. Z.

Answer.—Somnoform is the proprietary name of a mixture introduced in 1901. It was originally composed of ethyl chlorid, 60 per cent., methyl chlorid, 35 per cent., and ethyl bromid, 5 per cent. It was found that the mixture soon decomposed, which was largely due to the unstable nature of ethyl bromid.

The formula was changed and the mixture is now said to contain but 1 per cent. ethyl bromid. Small doses increase the pulse rate; large doses reduce it. The heart continues to beat after respiration ceases. Small doses increase the rate and depth of respiration. Large doses cause death by respiratory paralysis through overstimulation of the respiratory center, the diaphragm being in a state of tonic contraction. Breathing is usually easily established by artificial means unless the dose be a very large one, which is probably because the heart is so little affected that anemia of the medullary centers does not occur. Like ethyl chlorid, Somnoform has been employed as a substitute for nitrous oxid before ether anesthesia and for short operations, but has been used mostly by dentists for extractions. It is very rapid in its action, surgical anesthesia, which lasts from one to two minutes, being produced in from twenty to thirty seconds. The dose for adults is from 5 to 7 c.c., and for children 5 c.c. Patients have been kept narcotized for from fifteen minutes to half an hour, but few anesthetists care to risk repeating the dose more than once or twice. About 2 per cent. of the patients vomit and many suffer from intense headache which appears shortly after awaking. It is doubtful if the mixture has any advantage over straight ethyl chlorid, of which it is so largely composed. The methyl chlorid is supposed to hasten anesthesia, while the ethyl bromid prolongs it, but the small percentage of ethyl bromid can hardly be of any value unless a disagreeable odor is an advantage. As with ethyl chlorid, the chief danger with Somnoform is respiratory paralysis. The mortality is 1 in 10,000 or 12,000, which is less than that of chloroform (1 in 5,000 or 6,000), twice as great as that of ether (1 in 20,000 or 25,000) and four times as great as that of nitrous oxid (1 in 50,000). On account of the exceedingly rapid action of both ethyl chlorid and Somnoform it can readily be understood how easily the limits of safety may be overstepped and a dangerously deep degree of narcosis be produced in a few seconds. Reference may be made to Queries and Minor Notes, March 16, 1912, p. 806.

CARAMEL SUGAR FOR DIABETICS

To the Editor:—1. What is the chemistry of fully polymerized sugar as advised in the treatment of diabetes by Grafe (*München. med. Wchnschr.*, June 30, 1914; abstr., The Journal, Aug. 1, 1914, p. 437) and Umber (*Deutsch. med. Wchnschr.*, Feb. 11, 1915; abstr., The Journal, March 27, 1915, p. 1113)?

2. Is this sugar handled by any firm in this country?

Roy Blosser, M.D., Atlanta, Ga.

Answer.—The chemistry of caramel is not well understood. Earlier investigators regarded caramel as a complex substance composed of several ingredients, but later research, especially that of Stolle (*Chem. Centralbl.*, 1899, xi, 1021), shows that the several constituents previously isolated from caramel were not chemical entities. Stolle concluded that caramel prepared by heating sucrose (cane sugar) was a single definite chemical substance having the formula $C_{12}H_{18}O_9$. This, he claimed, is formed by the elimination of water from sucrose as follows: $C_{12}H_{22}O_{11}=C_{12}H_{18}O_9+2H_2O$. The caramel of Stolle is an amorphous substance exhibiting a conchoidal fracture and a red brown color. It melts between 134 and 136 C. and is soluble in water, but insoluble in alcohol. It contains only 0.7 per cent. unconverted sugar.

Commercial caramel, commonly called sugar coloring and used to impart a brown color to various commercial products, is usually made by heating glucose instead of sucrose. It is a dark, syrupy liquid and instead of being a definite chemical body is a complex mixture of several substances, among which are coloring substances, an odorous principle, some undecomposed sugar, a bitter substance probably caramelan, and varying amounts of water.

2. We know of no firm that sells purified caramel in the United States.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Iowa: Des Moines, October 19-21. Sec., Dr. Guilford H. Sumner, State House, Des Moines.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

New Jersey: Trenton, October 19-20. Sec., Dr. G. H. Norton, 429 E. State St., Trenton.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

The English Side of Medical Education

An article under this title by Mr. Abraham Flexner in the *Atlantic Monthly* for September, makes an important contribution to the literature on medical education. It really furnishes a comparison of the English with the German system of medical education, and shows the defects and the good points in each. Medical education in this country can doubtless benefit much by avoiding the defects, and by adopting the good qualities of the two systems. An abstract of Mr. Flexner's paper follows:

The English medical school is an outgrowth of the English hospital, for it began when the English medical student attached himself to a master whom he followed through the hospital wards. Such additional instruction as the student required—for example, in anatomy and pharmacy—he obtained in schools that grew up outside the hospital, but in close relation to it. In course of time, the separate masters, coming together, formed a "faculty," and their apprentices, being pooled, formed a student body. Thereon the so-called "anatomical schools" became part of the hospital schools. But the medical training was essentially a hospital apprenticeship. The organization consisted of practicing hospital physicians; the resources were merely student fees, and the spirit was intensely and immediately practical. The so-called laboratory subjects, therefore, gradually edged their way into busy hospital schools. Their teaching was at first entrusted to certain members of the hospital staff—usually the younger members—but this soon proved to be unsatisfactory, and the teaching of the underlying sciences was in time differentiated and committed largely to full-time teachers.

The German medical schools vary in extensiveness and completeness, but all possess adequate laboratory and clinical facilities. The preliminary education has been largely along classical rather than modern lines, and without special adaptation to the demands of medical training; yet it has been a serious education of uniformly high quality. Medical teachers have been selected because of scientific eminence. These teachers are called from one university to another as vacancies occur, and in these respects laboratory and clinical teachers are on the same footing. They represent precisely the same university type of activity and ideal. In all these respects English medical education fares badly in comparison.

The English medical school possesses a hospital, and, as a rule, the hospital and its outpatient departments contain material enough for the purposes of instruction, but this material has not been carefully differentiated. Medicine, surgery and obstetrics are recognized as separate divisions; but there is little intensive specialization, and research suffers in consequence. The English hospital also lacks the laboratory equipment and staff needed for the critical study

Miscellany

Effective Industrial Hygiene

An important result of the present "safety first" campaign is the opening of our eyes to a realization of the fact that it is not sufficient to make industries "safe" merely from an accident standpoint: they shall be "safe" also from a health standpoint. This principle is the keynote of an article by J. W. Schereschewsky of the Public Health Service in *Public Health Reports* on a plan for education in the avoidance of occupational diseases and injuries, in which he gives a tentative scheme for accomplishing this object. He says that the approximate average yearly loss through sickness of workers in this country would probably be about the same as it is in Europe—not far from eight to nine days for each of the 25,000,000 to 30,000,000 industrial workers, or an economic loss of $360,000,000 if the average annual earnings are $600. This would not take into consideration the loss due to premature physical decline or reduction in earning capacity, which at present cannot be estimated.

Any plan for improvement in this respect involves the education of every one concerned, which, Schereschewsky says, must be general in nature because of the close interdependence of all the units of society. Improvement in this respect first requires the education of the medical profession and the stimulation of interest in the study of diseases of occupation, the collection of clinical data bearing on occupational diseases, and the promotion of research along these lines. Education of the public is important, because an enlightened public opinion is necessary to the successful carrying out of any measures which may be recommended after careful study of the problems involved.

Schereschewsky says that although industrial workers constitute by far the largest class of medical patients, yet physicians in general regard the study of the relation of disease to occupation as a specialty with which the general practitioner and the specialist in other fields are not closely concerned.

The influence of the industries on health is a subject which has been given little attention in the courses of instruction in medical schools. Hospitals are the chief sources of clinical material and are the natural locations where intensive studies of diseases may be made. In order to utilize this source of information in regard to occupational diseases, the adoption of systematic methods and terms for recording occupations and diseases is necessary. Standard methods of history taking must also be employed. Death certificates should correctly and exactly indicate occupation and use the international system of recording deaths. Accurate information of this kind would be invaluable in the study of the mortality of occupations. Even if this were carried out in a relatively small number of hospitals, it would soon produce an accumulation of valuable information.

The instruction of the public to cooperate in procuring safety in the industries and the securing of personal and collective hygiene and sanitation, Schereschewsky says, must be the result of governmental action, federal, state and municipal, allied with other civic agencies. Minimum standards of industrial sanitation and legislation must be established, and this must be the work of the federal government. The adoption of such standards is the work of the legislatures of the states, but this need not preclude the adoption of additional measures by municipalities or by the employers of labor, labor organizations, etc.

As features of a public educational campaign in the prevention of occupational diseases and injuries, Schereschewsky gives the following outline: permanent exhibits; traveling exhibits including moving pictures; public lectures; bulletins issued for popular distribution by federal, state and local health authorities and by private associations; popular articles in the public press, and instruction in the public schools. All of these measures have been adopted and carried out to a certain extent in a few communities; some have been more generally employed.

Extensive results from any plan of education can be expected only after years of work similar to that outlined above. The employers of labor of course constitute an important factor in the improvement in respect to the prevention of occupational diseases. They too need to be educated, but now the idea is fast gaining ground among them that it is poor social and business economy to subject workers to avoidable industrial hazards. As a consequence, many employers are voluntarily improving working conditions in their plants, supervising the health of their employees and attempting educational measures among them. These measures have been found to yield increased efficiency and economy in production and have fostered the spirit of cooperation.

Liability for Pure Water

In an important decision by the supreme court of New Jersey in the case of *Jones v. Mount Holly Water Company,* the verdict obtained by the plaintiff for $750 damages on account of the illness of his children has been affirmed. It was shown to the satisfaction of the jury and the supreme court that contamination of the water supply by fecal matter, which was declared to be the cause of the illness of the children, was the result of negligence on the part of the water company. The responsibility and duty of a water company to furnish pure water is thus stated by Judge Kalisch:

"It must be borne in mind that the defendant company was in the water-supply business for profit. The plaintiff had paid for the supply which he was to receive, in advance. Hence it became the duty of the defendant company to give to the plaintiff water fit for domestic purposes, including fitness for drinking. Water is a necessity of life, and one who undertakes to trade in it and supply customers stands in no different position to those with whom he deals than does a dealer in foodstuffs. He is bound to use reasonable care that whatever is supplied for food or drink shall be ordinarily and reasonably pure and wholesome. . . . Actual notice or knowledge of the unwholesomeness of the water was not an essential element to be proven in order to establish the defendant's liability. It was sufficient if there was testimony tending to show that the defendant, in the exercise of reasonable care, might have discovered the unwholesomeness and dangerous condition of the water."

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Mr. Stephen Coleridge is a director and the mouthpiece of the English National Anti-Vivisection Society. Concerning complaint of its attitude toward him and the Society the *Medical Press and Circular* has, among other things, the following to say: "We regard the National Anti-Vivisection Society with the same benevolent amazement with which we regard anything else which is at once picturesque, emotional, and futile—the Society for the Restoration of the Stuarts to the Throne of Great Britain, for example. And, as to Mr.

Coleridge himself, we esteem him to be a great asset to the world of science. He relieves the monotony of accuracy which too frequently besets it. His excursions into it, like the Iron Duke's excursions into the French language, are courageous; they cause distraction and increase the gaiety of nations. A lawyer steeped in sentiment is sufficiently rare to be really remarkable, but when he insists upon floundering about the quagmires of scientific investigation with no better guide than a tremulous tenderness for the nerves of the nether animals, he becomes a priceless public possession. When the Hon. Stephen Coleridge takes the floor to suffer for a rose in aromatic pain, or to writhe vicariously for a narcotized newt, the chorus of sterile spinsters weeps in wistful sympathy, the eunuchs applaud, and the world wonders. For ourselves we emphatically disclaim any semblance of spleen, but we confess to a share in the wonder."

Medicolegal

Another Fraudulent and Unlawful Use of the Mails

(Moses vs. United States (U. S.), 221 Fed. R. 863)

The United States Circuit Court of Appeals, Second Circuit, affirms a judgment against the defendant Moses, who was the general manager of a company that made "oxypathors," and who was convicted of having made unlawful use of the mails. The court says that the indictment charged that the defendant had devised a scheme to defraud; that the scheme was to sell the device called an oxypathor on positive representations that it, among other things, "begets in reality a supplementary breathing through the skin and membranes of the human body"; that its application "increases the amount of oxygen consumed by the body"; that it "has the direct effect of increasing vital combustion and the circulation"; that it "causes the body to attract oxygen from the air"; that "by the proper use of the oxypathor the owner is absolute master of disease in all acute affections and in far advanced stages of the most formidable chronic diseases," etc.; that the scheme was to sell the oxypathor by means of said representations for $35, and to effect the sales by means of letters and advertisements sent through the mail; that the defendant knew these representations to be false; that the oxypathor was in truth and in fact wholly inert, powerless, lifeless, and dead, and utterly worthless and incapable of producing any of the results aforesaid, and was entirely useless for any purpose, except to sell to people who did not know the falsity of said representations; that as one of the instruments of said scheme to defraud, and "in and as a part of the executing of said scheme to defraud, and in attempting so to do, defendant did feloniously, unlawfully, and knowingly cause to be delivered by mail a certain letter," which was set forth. It gave instructions to an agent as to methods of effecting sales, and, as the indictment charged, was delivered through the mail to the addressees. It was contended that the indictment did not charge a crime within any statute of the United States; but the court deems it too plain for argument that the indictment charged an offense under Section 215 of the criminal code. Again, counsel for the defendant treated the cause as if the only alleged false representation was that the oxypathor "would cure all diseases," and that unless the government showed that it was absolutely worthless as a cure for disease the charge in the indictment was not proved. He ignored entirely the other representations. But whether the defendant would have made as large sales if he had merely represented the oxypathor as a cure-all was not important. He went further—quite shrewdly as the court thinks—and sought by his suggestions as to its oxygen-increasing effects to induce its purchase by people who had heard of oxygen and the absolute necessity of its introduction into the system by breathing pure air. If the evidence justified the jury in finding that these assertions were false, and that he believed them to be false, they might find a verdict against him. The physicians called for the government did not undertake merely to express some general condemnation. The witnesses testified that to an experienced physician nothing was indicated by the circumstance that a man felt better after he had lain recumbent for a time with the oxypathor applied to him when the only ailment he testified to was a "lame back" or "nausea." They testified to the value of rest, compresses, hot and cold, of diet, of bathing, of exercise, of sleep, of fresh air, of regularity in the functions of the bowels, of hygiene and sanitation generally. The defendant's literature impressed on all users of the oxypathor the importance of paying great attention to these things, and the government's witnesses testified that the mere circumstance that some one had used an oxypathor at the same time that the treatment was going on was no indication that it contributed anything to the result.

When Damages Allowed for Mental Suffering and Without Evidence Thereof

(Muskogee Electric Traction Co. vs. Rye (Okla.), 148 Pac. R. 100)

The Supreme Court of Oklahoma, in affirming a judgment in favor of plaintiff Rye for damages for personal injuries sustained while he was alighting from one of the defendant company's street cars, says that the rule is well settled that mental pain and suffering, accompanying personal injury or physical pain, is always the subject of compensation. The mental anguish, however, should be connected with the bodily injury, and be fairly and reasonably the natural consequence that flows from it. In this case the evidence tended to show that the plaintiff had suffered a severe injury to his hip and shoulder; that the injury to his shoulder was not only permanent but it was also progressive, that is, it would continue to grow worse as long as the plaintiff lived; that he suffered and was still suffering great physical pain. In such circumstances, direct testimony of mental anguish and suffering, while proper, is not indispensable to a recovery therefor. Damages of this nature are ordinarily determined by the circumstances of the case, as disclosed by the evidence, the amount thereof depending on the seriousness of the injury.

Charges for Medical Attention as Advances to Tenant

(Ligon vs. Roberts (Ala.), 68 So. R. 319)

The Supreme Court of Alabama affirms a judgment, disallowing a charge of $7.50 by the plaintiff for three visits as a physician, in this action to enforce a claimed landlord's lien for advances alleged to have been made to the defendant as the plaintiff's tenant. The court does not say clearly that the plaintiff would under any circumstances have been entitled to such a lien for such services. It says that he testified: "The professional visits that I made to Mr. Roberts' were June 16, 17 and 18. I charged $2.50 for each visit." To whom these visits were made was not shown by the plaintiff. If it be assumed that medical attention to the tenant or his family, or to his laborers, is advances under the statutes, the evidence for the plaintiff did not show that such services were rendered the tenant, the tenant's family, or the tenant's laborers; if rendered pending the tenancy, they might have been performed for some one else at the defendant's residence located on other lands than those rented from the plaintiff.

Use of One Roentgenogram to Illustrate Criticism of Another

(Boddington vs. Kansas City (Kan.), 148 Pac. R. 252)

The Supreme Court of Kansas says that in order to show the nature of the plaintiff's injury, alleged to have been sustained by reason of a defect in one of the defendant's streets, a roentgenogram was used, purporting to show a fractured rib and an injury to the shoulder. In order to elucidate the criticism of this roentgenogram another witness offered a roentgenogram of the breast of a child 5 years old to show the location of the ribs. It was urged that this was incompetent and prejudicial. But its significance was for the jury, who were told it was the picture of a child, and not of a man of the plaintiff's age, and, like an ordinary map, diagram, or model, it might be properly used by way of illustration.

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tion that requires most careful consideration, not alone so far as pertains to correction of errors of refraction, but also correction of various anomalies requiring general treatment.

Dr. J. O. Stillson, Indianapolis: I have frequently seen cases in which a very light tinted lens was a great comfort. It is not my habit to allow patients to wear these glasses for any undue length of time, on account of the psychologic effect which might lead their minds astray. However, the only colored glasses with which I have had much experience are the very light bluish ones, which are tinted just enough to take off the glare of light.

Dr. J. D. Heitger, Bedford: To cut out all the ultraviolet light is bad; but if there is an excess, it is advisable that it be toned down. To use a tinted lens as a continual lens is a mistake.

Dr. F. C. Heath, Indianapolis: I am in accord with what has been said as to the necessity of making careful diagnoses so as to ascertain the cause of the sensitiveness to light, and also with regard to avoiding the formation of the smoked glass or tinted glass habit. Some of us are going to an extreme in our opposition to tinted glasses. They certainly have a field of usefulness. A large number of patients coming to the oculist are neurotics—at least there is a neurasthenic element in the case. Whether you call it a psychologic effect or something else, they occasionally get relief from the tinted lens.

Dr. Casey A. Wood, Chicago: Probably the most common ordinary cause of chronic photophobia is some form of heterophoria. The difficulty of using both eyes together with ease and without strain may, of course, be associated, as it often is, with a refractive error; but when you correct the refractive error you really relieve the extrinsic muscle difficulty, and there is where the patient gets relief from the photophobia. Photophobia is almost always due to congestion of the vessels of the choroid. Every case of photophobia that comes to us should be very carefully investigated, and the cause discovered, if possible, and removed.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fifth Annual Meeting, held at Louisville, Sept. 21-23, 1915

The President, Dr. J. W. Kincaid, Catlettsburg, in the Chair

Pneumonia in Children

Dr. J. Martin, Cynthiana: Outside the general management of each individual case, we must, first, relieve the congestion; second, stimulate the specific phagocytosis, and third, prevent absorption. Symptoms must be relieved as they arise. Drugs intelligently prescribed do good; but when they are ordered carelessly or according to an unreasoning routine, much harm may be done.

Lobar Pneumonia

Dr. Burnett W. Wright, Bowling Green: Developing in the course of some other pulmonary disease, lobar pneumonia may be more or less limited; but when it does not occur as a complication of a previous affection of the lungs, it as a rule affects at least an entire lobe. In the large majority of cases, the condition is acute, but it does occur in a chronic form, resolution occurring with a solidification present for several weeks, after the crisis should have occurred. Occasionally the exudate fails to liquefy, takes on a fibroid change, and the solidification becomes permanent. The question of the immunity to lobar pneumonia is one of individual resistance against the virulence and amount of the infection. The bacterial cause we may consider omnipresent, and repeated attacks must be blamed on damaged lung tissue of subnormal resisting power.

DISCUSSION

Dr. Phillip Barbour, Louisville: The mortality of lobar pneumonia in adults is quite high, while in young children it is not over 5 per cent., and most authorities put it at from 1 to 3 per cent. A child with a deposit of fibrin in the lung, and with a heart strong enough to pump blood through the rest of the lung, will live through a lobar pneumonia. But a child with catarrhal or bronchopneumonia, with every bronchus and bronchiole filled with mucus, will die because it will strangle to death with its own fluid.

Dr. Henry E. Tuley, Louisville: One reason for the difficulty in making a diagnosis of pneumonia is that we are too prone to do away with the stethoscope in the examination of the child's chest. Take an infant of 1 or 2 years of age, and it is absolutely impossible to examine the chest of that child throughout with the ear. It is absolutely essential to use a bell stethoscope which will cover every area of the child's chest. This is particularly true of areas of consolidation, largely of the infra-axillary vein, where it seems that there is considerable distance between the back of the head and the ear. I have seen a case of central pneumonia with delayed transmission of the sounds to the surface that would give bronchial breathing, and except for the clinical signs one would not be able to make a diagnosis for several days until the process had gradually worked its way to the surface. One of the most frequent of the valuable diagnostic signs is the absence of a respiratory murmur over the consolidated area.

Dr. Leon Solomon, Louisville: During the winter of 1893 and the spring of 1894 there visited Kentucky, and in particular Louisville, a type of pneumonia which will be remembered by many of the Louisville physicians, all of the patients dying. I recall the case of a man who died of pneumonia before the diagnosis could be made. Patients in the wards recovered fully from other diseases, were ready to go home, were stricken with pneumonia and were dead within from twenty-four to thirty-six hours, the diagnosis not having been made until necropsy revealed the nature of the disease.

Dr. W. W. Anderson, Newport: I should like to emphasize the point of a sense of resistance under the percussion finger as of use in determining small areas of deep consolidation. In any case of acute inflammation of the lungs or of beginning chronic inflammation, while it is still in the early stages, you will find a resistance just exactly as you find it over the inflamed appendix or gallbladder.

Dr. W. F. Boggess, Louisville: The treatment of pneumonia resolves itself into some very simple, practical way of handling it. First, is plenty of fresh air. The patient should be kept in a room which is well ventilated, with all the windows wide open even in winter time. Some years ago we had a patient in the City Hospital, with double pneumonia, with a temperature of 105, pulse 140, and respiration 60. It looked as though the patient was going to die. He was put under the awning of an open window, and the next morning, instead of being dead, when I raised the awning he was much better. He slept well, and subsequently recovered.

Dr. W. T. Reddick, Paducah: The use of creosote carbonate is very advantageous in the treatment of aged persons and infants who have pneumonia, particularly in those patients who are plethoric and have a full-bounding pulse. Veratrum is especially valuable in these cases.

Dr. Arch Dixon, Henderson: The best treatment for pneumonia is, first, good ventilation, with the windows of the room wide open, and second, cold packs, especially in the sthenic cases; the whole chest should be enveloped with them, and they should be taken off and reapplied. In this way the temperature is reduced and the patients go to sleep. I have used creosote carbonate a great deal and with good results.

A Plea for a More Thorough Examination of Cases Presenting Symptoms Referable to Pulmonary Tuberculosis

Dr. O. O. Miller, Louisville: The following are the indications which should lead us to the examination of the chest for evidence of pulmonary tuberculosis: 1. A family history of tuberculosis in persons complaining of ill health. 2. A history of hemoptysis. 3. A history of pleurisy or fistula in ano. 4. Evidence of past or present tuberculosis of lymphatic glands or other structures. 5. Cough with or without expectoration. 6. Hoarseness or loss of voice. 7. Loss of flesh or strength without obvious cause. 8. Light lividity or restlessness on exertion. 9. Persistent pyrexia, rapid pulse, low blood pressure, or complaint of night-sweating, or repeated chills. 10. Anemia or dyspeptic symptoms in a young adult. 11. A recent acute illness with protracted convalescence, especially from the infective fevers of the young. 12. Continued general weakness following childbirth. 13. History of recent exposure to infection. 14. History of malaise, langor, anorexia or what the patient may call being run down.

Medical Treatment of Incomplete Abortion

Dr. Bernard J. O'Connor, Louisville: Two distinct facts stand out prominently in the causation of hemorrhage and infection. In the former, the uterus contains some foreign body which it is trying to expel, or the musculature of the uterus is impaired, while in the latter, the infectious material has in some manner been introduced from without into the body of the uterus. An unemptied uterus predisposes to infection. The scientific treatment for incomplete and inevitable abortion is to empty the uterus promptly, avoiding at the same time any procedure which might lead to the introduction of infectious material, into either the uterus or the blood stream.

DISCUSSION

Dr. Edward Speidel, Louisville: We should avoid vaginal examination in cases of abortion unless there is a positive indication for them. My treatment of abortion is active interference.

Ossification of the Bones of the Hand

Dr. J. W. Pryor, Lexington: My belief that normal ossification of bones presents evidence of heredity is based on the facts that we may find similar conditions in the chronological order in the ossification of the bones of the carpus, and that when extra epiphyses are found to be present they may be found in the hands of the brothers and sisters. I have encountered only a few instances in which there was an extra epiphysis present, such as that occasionally found at the proximal extremity of the metatarsal bone of the index finger. Unfortunately, when I did find this extra epiphysis present, the phenomenon occurred in most instances in the only children of the parents, and I have not been able to follow the families. I have had abundant opportunity to observe the similarity of the order of the ossification of the bones of the carpus in the hands of brothers and sisters. I have followed these cases through a number of years. In some instances I have made examinations several times during the year, and when necessary during the period of several years in succession in order to obtain results.

Complications of Middle Ear Suppuration

Dr. L. S. Givens, Cynthiana: In the acute diseases of the middle ear cavity which may lead to brain abscesses, the two most vulnerable spots by which infectious matter may enter the brain tissue or its membranes directly are the tegmen tympani or tegmen antri, by erosions or through dehiscences. Labyrinthitis with acute otitis media is usually the avenue to a fatal meningitis in those cases in which death occurs a few days after the beginning of the suppurative process. Secondary involvement of the labyrinth is seldom encountered in chronic suppuration. When present, the mischief has usually been done in the acute stage of the disease, and although both the oval and the round windows may have remained bathed in pus for years, extension to the labyrinth seldom follows. In four of twenty-one cases, the duration of the suppuration was unknown, in seven there was a history of chronic suppuration, while in ten intracranial involvement following an acute suppuration of the middle ear occurred.

DISCUSSION

Dr. William J. Thompson, Newport: Ninety-five per cent. of all middle ear troubles originate in the throat or nose. From the middle ear it is only a step to the antrum, and only a short step from the antrum to the mastoid cells. When the mastoid cells are involved, we may not only have abscess of the brain, but also have the lateral sinuses denuded, and the patient is liable to die before we think he is seriously ill.

Dr. B. A. Bledsoe, Newport: In a chronic otitis media with a large perforation in the drum, with pus escaping from the perforation, only a small part of the necrotic area is seen. The destruction is going on in the entire middle ear and extending back into the mastoid antrum, involving the mastoid cells. Unless tension is increased in the mastoid cells, there are not going to be marked symptoms of mastoiditis. In chronic cases, when the drainage is free, a mastoid inflammation may produce an acute exacerbation, and the most important complication to remember is that of brain abscess.

Dr. W. B. McClure, Lexington: The remedy to prevent this condition is free drainage by opening the tympanum. The general practitioner may very readily, with a good light and the proper instrument, establish drainage, and in a large percentage of these cases the mastoiditis and other extensions following mastoid involvement may thus be prevented. I believe that in every case in which there is a bulging red ear drum, with pain, if an incision is made and the contents of the middle ear let out, not only will the pain be relieved and external drainage established, but complications also will be prevented.

Dr. J. F. Reynolds, Mount Sterling: No doubt many have diagnosed abscesses in the liver, kidney, spleen and various other organs without being able to tell the origin of the septic material. Have these patients ever been asked if they have ever suffered from middle ear suppuration? If we cannot find the origin of the septic material elsewhere, we should always inquire of these patients as to whether or not they have suffered from middle ear inflammation.

Focal Infections

Dr. N. T. Yager, Louisville: In all cases of obscure systemic derangement, a thorough examination of the oral cavity should be made by a competent dentist and roentgenograms taken of every tooth. One should not take the patient's word for the condition of his teeth and mouth. Many teeth are extracted for apical abscesses from which the patient has experienced no local inconvenience. More attention should be paid to physical diagnosis and bacteriology by the dentist and cooperation of the medical and dental professions.

DISCUSSION

Dr. M. L. Ravitch, Louisville: The teeth sometimes play an important part in infections. I recall a case in which the jaw was affected, and the disease was diagnosed as cancer. At my suggestion certain teeth were extracted, and after the use of mild antiseptics, healing took place and very little scar was left. It was not a case of cancer at all but a condition brought about by diseased teeth.

Dr. John J. Moren, Louisville: At one time I began to suffer with pain in my joints and hands, so that shaking hands was absolutely painful to me. I had a lower molar tooth which was hurting me a great deal. I went to a dentist for the purpose of having it extracted, if necessary, but he refused to extract it because he wanted to save it. I decided to take the initiative myself. I had a roentgenogram made, and it showed an abscess in two roots. The tooth was removed, and within two weeks I had practically no pain either in my joints or in my hands. I did not take any medicine.

Dr. Michael Casper, Louisville: It is a common occurrence for patients to have unerupted teeth. A great many cases of facial neuralgia and of headache, especially lateral headache, can be explained on the ground of unerupted teeth which are not discovered until roentgenography is resorted to.

Dr. C. E. Purcell, Paducah: A few years ago a young woman came under my care who had intolerable pain over the side of her face. Her condition had been diagnosed as tic douloureux, and she was advised by a surgeon to have the ganglion resected. He was about to remove the ganglion, but for some reason or other his time was so occupied that he did not get to do it, and the girl was dismissed from the hospital. She went home, her dentist extracted a molar tooth which was badly decayed, and she recovered.

(To be continued)

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

(Continued from page 1304)

Treatment of Fractures

DR. JOHN B. ROBERTS, Philadelphia: The essentials of subcutaneous fracture treatment, so far as the injury is concerned, are anesthesia, with comparison of the normal limb and accurate reconstruction of bony contours; verification of line of fracture and accuracy of reduction by Roentgen ray when practicable; anatomic and physiologic knowledge of muscles and bones; well-fitting retentive appliances; early frictions, skilful early mobilization, and careful massage with frequent inspection.

DR. JOHN B. LOWMAN, Johnstown: Open treatment of fractures has taught us that in some cases delayed union is caused by too close approximation, thus inhibiting callus formation, producing bone absorption and leading to infection and necrosis of bone; it has also taught us never to plate a compound fracture. The open treatment is indicated in fractures which cannot be reduced properly, especially complicated fractures around joints. Bone grafting seems to be superior to all other methods, although these other methods have their advantages. In all fractures of the bone shaft, plating is the best method and should be done as early as possible. Out of twenty-five fractures of the shaft of the femur plated, twenty-three patients are back at work at their former occupation; this has been the exception in those treated by the closed method.

DISCUSSION

DR. WILLIAM L. ESTES, South Bethlehem: The American Surgical Association appointed a committee two years ago to standardize as far as practicable the various results as regards treatment of fractures, but at the very outset our work was almost entirely nullified by the fact that we could get proper records from only a very few sources in the United States. For that reason the committee elaborated a form of record which we are trying to have introduced, and which we believe will give us an opportunity to collect data which will finally lead to some sort of result in establishing what ought to be the proper treatment of the ordinary fracture.

DR. P. G. SKILLERN, JR., Philadelphia: Nitrous oxid gas should always be administered to afford the surgeon as well as the patient the best conditions for a complete reduction. After the attempt at reduction, a roentgenogram should be taken. If the fragments are still unreduced, the cycle of administering gas, reducing and making roentgenograms should be repeated. It may be necessary to repeat this cycle two, four or even six times in obstinate cases, but each cycle is harmless, though perhaps slightly inconveniencing to the patient. It is only after such repeated attempts by their failure prove the fracture to be irreducible clinically that operative treatment is indicated. After reduction, a copiously padded and carefully applied fixation dressing should be put on, treating each fracture in an individual and not a routine manner. Of the methods of operative fixation, that by the use of metal plates is the least desirable, and, if indicated at all, metal fixation is best employed for fresh fractures, and not for cases of nonunion. For nonunion, by far the best method is the employment of the autogenous bone graft.

DR. EDWARD MARTIN, Philadelphia: I am in accord with the dictum that metal plates always delay union, and are to be avoided save in exceptional cases. The statistics studied by Estes show that operative treatment is less frequently required in children than in adults. This is in part due to the fact that in the young a moderate deformity has a tendency on use to gradual correction. Such tendency is never exhibited in the adult. In the latter, a good union with moderate and allowable deformity, if the bone be a weight-bearing one, may become on use a crippling and deforming one. Hence, given even a slight angulation of the leg, bone weight bearing should not be allowed for many months.

DR. CHARLES E. THOMSON, Scranton: In regard to the statement that fractures should be treated by skilled surgeons, that is not practicable. Our fractures occur in the country, and the skilled surgeons live in the big medical centers. The general practitioner has to treat many of our fractures. Dr. Roberts says, "Teach your students to treat fractures." This is the key to the situation.

Acute Pancreatitis

DR. JOHN B. DEAVER, Philadelphia: By acute pancreatitis we ordinarily understand the classical severe type, described by Fitz, in which there is hemorrhage and extravasation of pancreatic juice, resulting in profound general shock, intoxication and local destruction of tissues with ensuing gangrene or suppuration. In the last few years, surgery has revealed that the lesser inflammatory lesions of the pancreas are common. It has not been sufficiently pointed out that acute pancreatitis without the severer manifestations of hemorrhage and extravasated ferments is not uncommon. Many cases in which operations have been performed have been unrecognized, and attributed to disease of the biliary tract. The treatment of pancreatitis has not as yet been standardized because of lack of knowledge of its exact cause and the mechanism of its production. Pancreatitis is a result of infection or duct obstruction or a combination of the two. Operative intervention should aim to establish the cause and relieve it. Infective pancreatitis secondary to disease of the biliary tract should be treated by the measures adapted for the relief of biliary infection. Obstructive pancreatitis due to stone in the papilla of Vater or to other abnormality of the papilla demands relief of the obstruction. In ultra-acute cases, the question of operability enters strongly and may forbid everything except simple drainage. I protest against the sending of acute abdominal cases to the medical wards of the hospital. By the time they reach the surgeon, valuable time has been lost.

DISCUSSION

DR. ERNEST LAPLACE, Philadelphia: There has always been some mystery connected with the question of disease of the pancreas. This question of pancreatitis is in the same condition as appendicitis was fifteen or twenty years ago. There is no such condition as an uncomplicated pancreatitis any more than there is an uncomplicated appendicitis. When a violent pain is felt in the epigastrium with symptoms of shock, that patient should be transferred to the surgeon immediately and we will drain at once. Some of these cases are accompanied by a dilated duodenum with intestinal sepsis as a predisposing cause to the infections which will travel up through the ampulla of Vater and carry to the pancreas whatever infection has found its way up there. The complications of pancreatitis and cholecystitis travel together. It is the same infection. Dr. Deaver first called attention to the lymphatics. The duodenum and pancreas are supplied by the same lymphatics and the spleen and body of the pancreas by the same lymphatics. I make a plea for early operation.

DR. LAWRENCE LITCHFIELD, Pittsburgh: I have been associated with medical wards for the past twenty-five years, and I have often regretted the time lost by the fact that these cases were first sent to the medical wards. I wish to emphasize also the fact that valuable time is lost in many cases by delaying operation too long in the hope of making a definite positive diagnosis. There are several conditions in which an operation must be undertaken before a positive diagnosis can be made, if the patient's life is to be saved.

Management of Toxic Goiter

DR. CHARLES H. FRAZIER, Philadelphia: Toxic goiter may begin as simple goiter and be transformed into the toxic variety or the true exophthalmic goiter. The principal distinction to be made surgically is in reference to the severity of the case. The treatment of this condition belongs essentially to the domain of surgery. If the circumstances of a person suffering with moderate thyrotoxicosis are such as to render impracticable a prolonged period of rest, I strongly urge immediate operation and the removal of as much of the offending gland as conditions indicate. The mortality is insignificant. I have not lost a case of this type. In a grave form of intoxication the watchword is caution. It is out of the question to say what the order of procedure should be until after the patient has been under observation in bed for a few days, during which a study of the body functions and all the available secretions and fluids has been made. Each case presents its own problem as to whether it should be treated by boiling water injections, ligation of one or more vessels at one or more sittings or by partial thyroidectomy. A good working rule when in doubt is to err on the side of conservatism. A patient should not be operated on in the stage of acute exacerbation. Rest is the most fruitful nonoperative measure. I have tried the Roentgen rays and radium without appreciable effect. The relation of the thyroid to other ductless glands, especially the thymus, should not be overlooked. In seventy-six thyroidectomies for toxic goiter I have had no deaths, and in twenty-four ligations two deaths. I would not at this time consider such cases as the two fatal ones suitable for that particular operation at that cycle of the disease.

DISCUSSION

Dr. John D. Singley, Pittsburgh: Careful interpretation of the history and of the clinical manifestations of toxic goiter has taught us to avoid operation during the periods of exacerbation and in the final stages of the disease. To this, much more than to any great improvement in operative technic, is due the marked reduction in operative mortality which has taken place in recent years. The earlier that goiter patients are operated on, after the onset of toxic symptoms, provided operation is not done during acute exacerbations, the better the results, both immediate and remote. No operation is of any avail, and any will probably prove fatal in the most serious advanced cases, with widespread terminal degenerations, especially of the heart muscle, with irregular pulse, low blood pressure, and periodic attacks of delirium cordis (Kocher). The after-treatment is of the greatest importance. These patients should not be discharged from the hospital after operation to work out their own salvation, as they too often are. Careful supervision by a competent medical adviser should be carried out for several years at least.

Dr. James D. Heard, Pittsburgh: The severity of the cardiovascular disturbances in toxic goiter makes it important that patients of this type should be studied carefully in regard to disturbances of cardiac mechanism before they are submitted to operation. Alternation in force of ventricular systole should be sought for diligently, and when found in connection with a heart rate which is approximately normal, it is to be regarded as greatly increasing the gravity of prognosis in a given case. The administration of belladonna should not be a routine procedure. It should be remembered that belladonna in full dosage removes the inhibiting action of the vagus, and this result would be undesirable in cases in which the heart rate is already unduly accelerated. For like reason, the administration of atropin to guard morphin would be unscientific. Morphin requires no guarding. It acts favorably in these cases, partly through its action on the vagus, and it would be a distinct disadvantage to remove this inhibitory action in cases in which the heart rate is already accelerated.

Dr. G. M. Astley, Philadelphia: It is a question in my mind as to whether injections of boiling water should not be used first before ligation. The problem seems to be the throwing out of commission of a certain amount of gland substance. The boiling water will accomplish that. I have known cases in which, when boiling water was used, the subsequent surgical sections were very simple.

Dr. S. J. Waterworth, Clearfield: If we avoid the trachea, I believe we will have fewer bad symptoms following operation. As to operation following hot water injections, I have injected with hot water and know it renders operation much more difficult. There is produced a general thyroiditis. The tissues become matted together, and you have more difficulty in getting the goiter out.

Rectal Anesthesia in Thyroidectomy

Dr. Walter Lathrop, Hazelton: In the oil-ether rectal anesthesia the brain is not deeply narcotized, and the patient regains consciousness rapidly, while the sensation of pain is held in abeyance for a considerable time; the eye reflex is seldom lost, but muscular relaxation is complete. The method is very valuable where fear is a prominent element, as is the case in hyperthyroidism. The postoperative effects are much milder than after inhalation narcosis. In thyroidectomy, in which freedom from obstruction in the operative region is desirable, the rectal method is ideal. Also the patient can be anesthetized in bed and removed to the operating room and thus have no conception of what has occurred. This is a great aid in realization of the anociassociation method. I have used the method in 118 cases since June, 1914, with most satisfactory results.

DISCUSSION

Dr. John W. Luther, Palmerton: My experience with colon-oil-ether anesthesia is limited to forty-seven cases; thirty-six were abdominal operations in which complete muscular relaxation is of greater importance than in head and neck work. In twenty-two of my cases no additional anesthesia was required, and in eighteen of the remaining cases only a dram to an ounce of ether by inhalation was needed. The duration of operation varied from fifteen minutes to two hours. On account of the slowness in preparation, the method is not suitable when several persons are to be operated on in succession. One of my patients died of pneumonia seven days after operation; but this was a septic case, and the result cannot be attributed to ether. The narcosis is uniform from beginning to end.

Dr. W. Hersey Thomas, Philadelphia: My experience in operating on seventy-three patients under colonic anesthesia has convinced me of its value in selected cases. I have not found that rapid return to consciousness is the rule. Although the presence of some of the superficial reflexes would indicate a light anesthesia, the great majority of my patients were profoundly anesthetized. I have seen the anesthesia deepen after return of the patient to the ward, in spite of rectal irrigation. The conviction has grown that the liver, which bears the brunt of the attack in this method, is markedly affected, and that it is a toxic change in this viscus which prolongs the anesthesia. The return of consciousness is hastened by the introduction of saline solution. The patient should be kept under skilled observation for several hours after return to the ward.

Dr. Walter Lathrop, Hazleton: In abdominal cases we have had quite an experience, especially in miners having asthmatic conditions. If you start ether in these cases they choke, and must stop. These patients sleep perfectly under rectal anesthesia. I have seen very few who could not be aroused.

Surgical Treatment of Ascites

Dr. Robert T. Miller, Jr., Pittsburgh: Of five cases in which ascites was associated with cirrhosis of the liver, four were due to alcoholic or syphilitic cirrhosis, and the fifth almost certainly was due to malignant diseases. The patients varied in age from 18 to 60 years. Ruotte's operation was made in each case, four times unilaterally and once bilaterally (two sittings); in three cases general anesthesia was used, and in two local anesthesia. The only mortality was the malignant case. In all but the malignant case, abdominal paracentesis was necessary at frequent intervals before operation; after operation, the necessity for tapping the abdomen was absolutely done away with in two cases and all but eliminated in two other cases, while in the fifth case (malignant) the abdomen was not tapped either before or after operation. In one case operation (double) was followed by a decrease of the umbilical circumference from 110 to 97 cm., and an increase in average daily urinary output from 480 to 150 c.c. Of the four cases of cirrhosis of the liver, three were restored to self-support, and the fourth, a boy of 18, was advanced from a condition of invalidism to a position of helpfulness in the household. In no instance was any ill effect observed from drainage of the ascitic fluid directly into the circulation. The results obtained are encouraging; so good, in fact, as to warrant recommending a trial of this method.

DISCUSSION

Dr. James D. Heard, Pittsburgh: Statistics available as to the result of the Talma operation show that from 35 to

50 per cent. of cases of ascites due to cirrhosis of the liver may be cured by early operation. These statistics should be brought prominently to the notice of internists. The statistics of Ruotte, Soyesima and Miller indicate that venoperitonostomy is capable of yielding such favorable results that a further trial of this method is to be recommended strongly. Operative measures should be resorted to in the early stages of ascites before the patient has been subjected to the local irritation which results from frequent tappings, repeated withdrawal causing loss of protein, and general failure of patient owing to the continued presence of a condition which, in spite of repeated tappings, usually slowly progresses toward an unfavorable end.

Dr. J. E. Sweet, Philadelphia: In 1876, von Eck devised his operation, anastomosis between the portal vein and the vena cava. This operation has been applied only three or four times. Usually in true cirrhosis the portal vein is so tied up in adhesions that a true Eck fistula is not feasible. Dr. Edward Martin and I devised a modification of the Eck fistula consisting on an anastomosis of one of the large mesenteric veins with the iliac vein at the point at which they cross. That is a more positively curative procedure than the operation advocated by Dr. Miller, which amounts to continuous tapping.

Fulguration Treatment of Bladder Papilloma

Drs. A. A. Uhle and W. H. MacKinney, Philadelphia: Since November, 1911, when we first employed high frequency destruction, we have observed 51 primary neoplasms of the bladder. A diagnosis of benign papilloma was made in 22 cases, of papillary carcinoma in 3, and carcinoma in 26. High frequency destruction was employed in 19 of the benign papillomas, in 3 cases of papillary carcinomas, and 7 cases of infiltrating carcinomas. In all cases of tumor of the bladder, hemorrhage is the predominating and frequently the only early symptom. The bleeding is usually marked and ceases as promptly as it began. With three exceptions the monopolar Oudin current, generated from a Wappler coil, was employed and found perfectly satisfactory. The illumination was derived from a dry cell battery, and the spark from the circuit. General anesthesia is not necessary, a satisfactory local anesthesia being obtained by the use of novocain. In nervous patients or patients with a highly sensitive urethra, treatment may be facilitated by a hypodermic of morphin administered one hour previously. A clinical cure was based on freedom from symptoms, a clear urine, microscopically free from blood and pus, and the absence of any evidence of tumor by cystoscopic examination three months after the last treatment. Every patient was impressed with the possibility and danger of recurrences and advised to return at intervals of six months for cystoscopic examination.

DISCUSSION

Dr. B. A. Thomas, Philadelphia: To treat a papilloma of the bladder by any means other than high-frequency sparking or electrocoagulation must be regarded as a serious surgical error, poor judgment or selfishness. On the other hand, any form of endovesical treatment for a malignant growth, preeminently sessile carcinoma, provided it is curable radically, is the height of folly. My experience comprises not less than sixty-nine tumors, varying in size from a pinhead to masses almost completely filling the bladder. Almost invariably bleeding has been a prominent factor, but fortunately, as a rule, the first effect of electrocoagulation is hemostatic. A few patients have been so exsanguinated as to require preliminary supporting measures. In one case with 19 per cent. of hemoglobin, two transfusions were done before the treatment of the tumor of the bladder was undertaken. Without exception, cure has resulted in each case of papilloma, as well as in papillary carcinoma with a nondegenerated pedicle. In no case of sessile carcinoma or other malignant growth involving the bladder wall has cure been obtained. I have employed both the Oudin and d'Arsonval currents, and prefer the former. It seems to make little or no difference whether the current be degenerated by a static machine or a coil; the results are equally good with the latter.

Dr. John L. Laird, Philadelphia: The character of the bladder growth in relation to its amenability to this form of treatment is a serious consideration, the benign and the superficially malignant tumors being appropriate, the infiltrating malignant growths demanding immediate surgical intervention. The treatment of the various types of benign papillomas requires a selection of the kind of current to be used. The interval between treatments is important, and should be governed by three factors: the extent of bladder involvement, the type of current employed and the degree of reaction to the treatments. I wish to emphasize that all vesical papillomas are potentially malignant and, therefore, early diagnosis and eradication are of the utmost importance. High frequency destruction is beyond doubt the method of choice. For the same reason, after an apparent cure, each case should be followed for a possible recurrence. Some severe and obstinate cases require patience, and frequently the result is unsatisfactory and disappointing; but the majority respond promptly with a result little short of miraculous.

Dr. Edward Martin, Philadelphia: First in regard to the operative treatment of bladder tumors, by which I mean the cutting operation: Those who observe and wish to hear from patients notice, to their astonishment, that the old operating cystoscope gives very much better results in papilloma operation than does the open operation. Those who have a certain number of these papilloma cases have observed a widespread recurrence after the operation, and there seems no adequate explanation of this, except the disturbance caused by gross traumatism. We have, first, the lesson that the local nontraumatizing treatment is better, than instrumentation. The second point I wish to bring out is the innocuousness of this desiccation in the ordinary run of cases. For all practical purposes the majority of these people could attend to their ordinary business. They have no further discomfort and their lives are not materially interfered with. When the cystoscopist is unable to decide as to the malignancy or the benign nature of the lesion, I feel that this desiccation treatment should be tried and resort to our perhaps grosser methods follow.

Dr. H. M. Christian, Philadelphia: I want to emphasize the point made by Uhle and MacKinney that every so-called benign tumor of the bladder must be considered potentially malignant, and that a man with a so-called benign tumor in his bladder has to all intents and purposes dynamite in that bladder. In cases on the borderline, where there is a chance, the patient should be given the high frequency current. I want to emphasize again the importance of looking on sudden, inexplicable, rapidly disappearing hematuria, rapidly reappearing hematuria, with or without pain, as very significant of bladder tumor and requiring examination directly.

Dr. Alexander Randall, Philadelphia: I wish to call attention to the efficiency of electric fulguration of vesical papillomas (benign) and the recognition of the ultimate and potential malignancy of all such growths. In their early stage, therefore, while still benign, vesical papillomas represent a precancerous state. By their prompt and early recognition and treatment we shall be taking a definite step forward in the present campaign for the eradication of cancer.

Venous Thrombosis and Embolism

Dr. Angus McLean, Detroit: Although various causes have been assigned for thrombosis, our experiments have shown that an infection or toxin is necessary to its production. In our series of 1,610 laparotomies, thirty-three cases were followed by thrombosis or embolism. The embolus appeared on an average about two weeks after operation. The usual symptoms are chill and fever; if the obstruction is near the surface, pain is a prominent symptom. As for treatment, when once the condition has developed, absolute rest, warmth and measures to encourage the venous circulation are indicated. In the case of a thrombus, absolute rest should be insisted on as a precautionary measure against secondary embolism. This rest must be continued until the clot has had a chance to become thoroughly organized, a process which will usually take from three to four weeks.

(*To be continued*)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

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September, XXXVI, No. 9, pp. 425-466

1 *Form of Reflexes in Chorea. W. B. Swift, Boston.
2 *Study of Reflexes in Diagnosis of Nervous Diseases; Alteration and Absence of Umbilical Reflex in Diagnosis of Typhoid. H. C. Gordinier, Troy.
3 Case of Pituitary Disease (Acromegaly) with Polyglandular Syndrome. J. L. Bendell, Albany.

1. **Form of Reflexes in Chorea.**—Some authors believe in a single reflex in chorea—the knee jerk. Swift shows a reflex form that may appear during the elicitation of any of the normal reflexes. This form of reflex is really so peculiar as to amount to a sign of chorea of equal dignity with the respiratory signs of Graves and the new voice sign in chorea. The form of the reflex consists in an enhancing, retarding, or otherwise varying of the normal form of the reflex. It is described as the jerk-flop-wabble form of reflex response. It is any change of reflex motion caused by a choreic contraction. It occurs most frequently in the medium severe cases; and as a whole probably about one in five cases. It may be present in all the other normal reflexes.

2. **Diagnosis of Typhoid.**—Gordinier's study is based on the study of 111 cases certified to as cases of typhoid. Of this number four proved to be cases of la grippe, three of infectious endocarditis, four of pneumonia, one of pericarditis, and one of acute miliary tuberculosis. In only one of the above-mentioned cases was there the slightest alteration of the infra-umbilical reflex. This was a case of massive pneumonia that developed a suppurative peritonitis, the result of a deep-seated ulceration, with perforation of the ascending colon; and not until this perforation complicated the case did this reflex absent itself. The ninety-nine remaining cases were true cases of typhoid, and in eighty-six of these cases there was a definite alteration of the infra-umbilical reflex — 86⅔ per cent. Most cases of typhoid came in during the second or third week of the febrile reaction, and hence in sixty of these cases the reflex on admission was absent on both sides. In thirty-nine cases, however, that were seen during the onset of the febrile reaction it was noticed that during the beginning of the febrile reaction the reflexes were normal or slightly exaggerated, such as often occurs with the deep reflexes at the onset of multiple neuritis. But at the termination of the first week and the beginning of the second the reflex presented a characteristic alteration; that is, it was diminished first on the right side, then on the left, and in a day or two absented itself in the same manner first on the right and then on the left side. The reflexes remained absent until the temperature remained normal for several days when convalescence was well established. Then the reflexes reappeared, usually first on the side lost and then on the opposite side.

If the abdominal reflex is persistently absent after the febrile reaction has ceased, one should anticipate a relapse. In two cases of this type a definite relapse followed. In eight other cases with relapse, in which the reflex during the subsidence of the fever had reappeared, it again disappeared on the advent of the fever of relapse. Gordinier has never observed the infra-umbilical reflex absent in other febrile affections unless the abdominal cavity or peritoneum were directly affected. In three cases of paratyphoid responding at first to both the *Alpha* and the *Beta* types of the colon groups, it was absent on both sides until convalescence was complete, about two weeks after the evening temperature had remained normal. Gordinier has observed its absence on one side or other in six cases of pelvic peritonitis due to tubal disease, also in three cases of suppurative peritonitis due to perforative appendicitis, in one case of general peritonitis from ruptured gallbladder, in one case of perforation of a duodenal ulcer, and in a case of general suppurative peritonitis following perforation of the ascending colon. In thirteen cases of acute appendicitis without rupture it was absent only on the right side, reappearing again after operation. He has frequently found it present in scarlet fever and measles, and it was also present in fifteen cases of lobar pneumonia. In two cases of Laennec's cirrhosis of the liver with moderate ascites, it was present, and also in several cases of intra-abdominal tumors. It was found absent in three cases of multipara with large, loose, pendulous abdominal wall. Gordinier believes that this reflex is absent only on the rarest occasions unless some abdominal or serious peritoneal complication has ensued. He regards it as being highly suggestive or diagnostic of typhoid, or of the paratyphoid group.

American Journal of Orthopedic Surgery, Philadelphia

July, XIII, No. 1, pp. 1-178

4 *Direct and Muscular Neurotization of Paralyzed Muscles. P. Erlacher, Graz, Austria.
5 *Method of Direct Neurotization of Paralyzed Muscles. A. Steindler, Des Moines, Ia.
6 *Operative Treatment of Osteo-Arthritis. E. G. Brackett, Boston.
7 *Local Treatment of Painful Nontuberculous Joints. G. G. Davis, Philadelphia.
8 Treatment of Convalescent Stage of Infectious and Atrophic Types of Arthritis. C. F. Painter, Boston.
9 Osteo-Arthritis in Its Relation to Mouth Infection. J. Head, Philadelphia.
10 Anatomic Specimens of Unusual Clinical Interest. A. W. Meyer, Palo Alto, Calif.
11 Osteitis Deformans (Paget's Disease). F. J. Gaenslen, Milwaukee, Wis.
12 Case of Congenital Elevation of Scapula—Sprengel's Deformity. D. E. Smith, St. Louis.
13 Symmetrical Congenital Anomaly of Fourth Metatarsal Bone. C. L. Lowman, Los Angeles.

4. **Neurotization of Paralyzed Muscles.**—Experiments performed by Erlacher on monkeys showed that it is possible to achieve a useful functional result within six weeks after stitching a severed motor nerve into a new point of the muscle. Also he was able by histologic examination to demonstrate abundant nerve fibers within the muscle. Experiments on guinea-pigs achieved the same results, this clearly proving that the point of entrance of the nerve into the muscle is nonessential, and that a paralyzed muscle can be sufficiently supplied from any other point with nerve fibers. Histologic examination showed that fine fibrillae had grown out from the thick nerve fibers and had formed motor end-plates on muscle fibers of perfectly normal appearance, with all the characteristic signs of accumulation of nuclei observed normally, though much thinner and finer. So that within the first four to six weeks it was possible to differentiate without error between the end-plates of the normal and the implanted nerves.

Erlacher advocates not to be satisfied with the simple neurotomy after Stoffel, because this method does not sufficiently protect against recurrences. It is better to follow Spitzy's suggestion and do a plastic operation, attaching the surplus nerve fibers of the spastic muscles to the overstretched and weakened antagonists, attempting on the one hand to strengthen the latter by supplying them with an excess of impulses from a center which is "overirritable," and, on the other hand, avoiding the danger of recurrence by attaching the severed nerve to another nerve track, or implanting it directly into another muscle. Erlacher was also able to establish that in order to supply a paralyzed muscle it is not necessary to use the prescribed nerve tracks, but that one can supply a muscle sufficiently by sewing a motor nerve directly into it at any point, thus producing a "neurotizing" function from that point.

From experiments Erlacher draws the following conclusions: First, the nearer the periphery the motor nerve was cut, the more rapid and certain was its regeneration; often in a short time (sixteen days) the complete regeneration of the motor end-plates takes place. Second, a dissected muscle flap can be sufficiently nourished and supplied with nervous elements from the underlying muscle. Third, degenerative changes occur rapidly in an isolated muscle flap even if it remains united only by connective tissue with a healthy underlying muscle, but no such high degree of degeneration is seen, as is seen in the case of poliomyelitic paralysis. Fourth, under the influence of the rapidly regenerating motor nerve a quickly progressive regenerative transformation takes place also in the muscle; thus after six weeks it might be considered as recovered in a functional and anatomic sense. Hence, it was evident that a paralyzed muscle can only achieve sufficient nervous functional capacity if its wounded surface rests widely on a healthy muscle.

Proceeding from these suppositions, in a further series of experiments Erlacher paralyzed a muscle by resecting its nerve, and sewed into it a broadly dissected centrally pedunculated flap from an adjoining muscle. These experiments confirmed that it is possible to supply a paralyzed muscle with nervous elements, namely, to neurotize it by way of another healthy muscle when the latter is broadly dissected and stitched into the former. Summarized, the following are the facts established: First, to provide a sufficient nervous supply for a paralyzed muscle it is not necessary to make an end-to-end anastomosis of the paralyzed nerve with a healthy one, but it is sufficient to stitch the healthy nerve directly into the muscle. Second, if no healthy nerve is at hand it is sufficient to use a flap of a healthy muscle for "neurotization"; this flap must be centrally pedunculated in order to provide sufficient innervation. Third, the point of implantation of the "*neurotiseur*" is less important.

5. **Neurotization of Paralyzed Muscles.**—Experiments as well as three clinical observations lead Steindler to believe that in the method of direct nerve implantation and muscle-to-muscle attachment, there is a possibility of a motor impulse being transmitted to the paralyzed muscle through physiologic channels. Neurotization of paralyzed muscle tissue from live nerve directly implanted seems probable, but neurotization of healthy muscle tissue by direct implantation of additional healthy nerve does not seem probable. At least Steindler found the speedy regeneration of the normal nerve and its end organs to be a barrier to the neurotization from a second nerve, or hyperneurotization, and although in one case it was possible to follow the nerve fibers as they entered the muscle tissue, still it was impossible to obtain muscle contraction from stimulation of this implanted nerve because of the preceding regeneration and restoration of the original nerve supply. In the three clinical cases cited a physiologic impulse is apparently acting on the paralyzed muscles, though Steindler cannot say as yet whether this actually means complete restoration of the nerve elements from the implanted nerve. He says that it is difficult to recognize the state of regeneration of nerve fibers in the microscope, but the finding of striated muscle fibrillae is surely suggestive of this possibility. But even in the event that the muscle-to-muscle attachment alone should be responsible for the impulse on the paralyzed muscle, which is not probable, this method would seem to be a good expedient to elicit cooperative muscle action.

6. **Operative Treatment of Osteo-Arthritis.**—The operative treatment of osteo-arthritic joints Brackett believes is applicable only: (*a*) when the disease is localized (monarticular, traumatic); (*b*) when it is the residuum of a process, which has been arrested. He cites cases.

7. **Painful Nontuberculous Joints.**—Davis is firmly convinced that the greatest cause of the persistence of pain in joints once injured or diseased is the irritation of repeated often slight traumatisms due to the movement of the parts. That this has not been generally recognized heretofore is due to the difficulty in successfully carrying out a treatment of immobilization. Davis advises absolute fixation as a cure.

Archives of Diagnosis, New York

July, VIII, No. 3, pp. 201-300

14 *Studies in Schick Diphtheria Reaction. A. Levinson and M. L. Blatt, Chicago.
15 *Diagnosis of Abnormalities of Myocardial Function. T. S. Hart, New York.
16 Pituitary Extract; Its Value in Distinguishing Between False and True Labor Pains. S. W. Bandler, New York.
17 Perversities of Internal Secretions in Their Bearing on Oral Pathology. H. Stern, New York.
18 Case of Acute Myeloid (Myeloblast) Leukemia. A. F. Beifeld, Chicago.
19 Situs Viscerum Inversus Totalis. F. Tice, Chicago.
20 *Clinical Study of Case of Epilepsy Apparently of Intestinal Origin. E. E. Cornwall, Brooklyn.
21 Diagnosis from Standpoint of Physicodynamics. J. M. Taylor, Philadelphia.

14. **Schick Diphtheria Reaction.**—Levinson and Blatt tested 208 children. Of this number sixty were normal, fifty-five were afflicted with diseases other than diphtheria or tuberculosis, eighty-six were tuberculous or suspects on whom a Pirquet was done, six had been vaccinated a few days before the Schick test was applied, and one was a case of diphtheritic paralysis. Series 1 consisting of sixty normal children between the ages of 7 months and 9 years, gave 47, or 78.13 per cent., negative and 13, or 21⅔ per cent., positive. Sex played no rôle whatever in the result of the reaction. Age on the other hand, did. All the children under 1 year of age showed a negative reaction, the susceptibility increasing with advance of age. In Series 2, out of fifty-five children afflicted with diseases other than diphtheria and tuberculosis, 34, or 61.8 per cent., showed a negative reaction to the Schick test. Here, also, as in the case of normal children, sex exerted no influence. Age was a factor, all children under 6 months reading negatively. In Series 3 thirty-three children, suspects of tuberculosis, received the Schick simultaneously with the Pirquet test. They seemed to have no influence on each other, some children giving a positive Schick and a negative Pirquet and vice versa. In Series 4, out of thirty-eight children that received tuberculin treatment, sixteen were positive. The result, however, bore no relation to the reaction obtained from the tuberculin treatment.

15. **Abnormalities of Myocardial Function.**—There is little doubt in Hart's mind that every subject of paroxysmal tachycardia has a defect of the myocardium that must be seriously considered. The prognosis is most difficult. Some patients over a period of many years have attacks which incommode them but little and the attacks become less severe, less alarming, and in some instances disappear altogether. Some have only a few attacks before the fatal termination. Hart has never seen a case that was fatal until a number of attacks had occurred, nor has he found such a case reported in the literature. The condition of the heart in the intervals between attacks is important as an aid in determining the seriousness in the individual case. If at these times the heart shows no abnormality other than occasional extra systoles, there is no imminent danger. If, however, marked valvular defects are present, if there is evidence of an old inflammation of the pericardium, if there is a general arteriosclerosis, if extra systoles constantly occur at frequent intervals, and if the heart is embarrassed in maintaining an adequate circulation in the periods of slow rate, the paroxysms will rightly be viewed with much apprehension. The paroxysm is exhausting to the heart. If the myocardial damage is made evident by the attacks only, the heart will probably successfully carry this stress; if, however, other evidences of myocardial damage exist, the strain of the paroxysm is a far more serious matter. The patients who do particularly well are young subjects with no evidence of cardiac abnormality between attacks. Middle-aged and elderly individuals sooner or later invariably develop other evidences of myocardial insufficiency and, while they may have many and frequent attacks of tachycardia without serious manifestations, the ultimate outlook is less favorable.

The frequency and duration of the individual attacks do not seem to be important factors in determining the prognosis. Much more important is the severity of the attacks as estimated by the degree of circulatory embarrassment, cardiac dilatation, the congestion of lungs and liver and edema of the extremities. Attacks associated with unconsciousness should be viewed with gravity. With a history of a moderate number of attacks over a number of years in a young adult, with intervening periods of normal heart action, one may usually give a good prognosis. When the patient is more advanced in years and has paroxysms of increasing frequency and severity, and intermediate periods characterized by signs of cardiac insufficiency, the outcome of any particular attack is doubtful, the prognosis for the future is not good.

20. **Epilepsy of Intestinal Origin.**—Of the facts observed or elicited by Cornwall's study of this case, the following are among the more significant: The family history was negative. In the patient's previous personal history constipation appears prominently, with gastric and intestinal flatulence and discharge of foul gases from the bowel. There was a peculiar sensation experienced in the upper right quadrant of the abdomen, brought on by running, described as "feeling as a lump bumping up and down," which was sometimes accompanied by pain. For some months before the convulsive attacks appeared, the patient devoted himself closely to study and neglected ordinary amusements, social diversions and out-of-door exercise. The most significant physical findings were those revealed by the Roentgen-ray examinations, which showed a coloptosis, with the transverse colon in the pelvis; the ascending colon extending one and a half inches above the iliac crest, and the descending colon extending 3 to 4 inches above the iliac crest, notable dilatation of the terminal portion of the ileum, and insufficiency of the iliocecal valve; but no distinct obstruction anywhere in the *course of the gut, and no particular stasis except in the terminal* portion of the ileum. The constipation showed a tendency to persist unless relieved by laxatives.

The convulsive seizures resembled, in general, those commonly observed in epilepsy, but they showed considerable variation in character, intensity, duration and the occurrence of premonitory and subsequent symptoms. They occurred six times during the year 1913, and eleven times between Jan. 1, 1914, and June 1, 1914. After being put on a course of treatment which was aimed chiefly at relieving constipation and intestinal putrefaction, the attacks diminished greatly in frequency. One attack occurred seven days after beginning the treatment, and then there was freedom from the attacks for more than six months. During the remainder of the period of a little over a year, while under this treatment, four attacks occurred, which were milder and less typically epileptic in character than the former ones. Three of these four attacks occurred while the patient was occupied with his college work, and was getting an insufficient amount of sleep; and they took place while he was sitting at a table studying, instead of when lying down as before. The facts observed suggest the possibility of a toxic-exciting or mechanical cause of intestinal origin and they also suggest what seems to be the most promising line of treatment.

Archives of Ophthalmology, New Rochelle, N. Y.

September, XLIV, No. 5, pp. 481-610

22 Some Practical Points in Eye-Work. A. Duane, New York.
23 Fibro-Adenoma of Ciliary Body. A. J. Bruecken, Pittsburgh.
24 Protection of Normal Crystallin Lens Against Harmful Effect of Ultraviolet Light. W. E. Burge and A. J. Neill, Chicago.
25 Some Unusual Changes in Visual Fields. W. C. Posey, Philadelphia.
26 Vision; Its Economic Value and Conservation. L. B. Whitham, Baltimore.
27 Operation for Ptosis with Formation of Fold in Upper Lid. E. Machek, Lemberg.
28 Etiology and Pathology of Brawny Scleritis. W. Gilbert, Munich.

Arizona Medical Journal, Phoenix

September, III, No. 8, pp. 1-10

29 Surgical Indigestion. A. L. Blesh, Oklahoma City.
30 Pyorrhea Dentalis. H. H. Braxton, Phoenix.

Boston Medical and Surgical Journal

September 20, CLXXIII, No. 14, pp. 489-526

31 Child and Community. E. O. Otis, Boston.
32 Transvesical Prostatectomy. P. M. Pilcher, Brooklyn.
33 *Study of Effect of Rowing on Heart. R. I. Lee, W. J. Dodd and E. L. Young, Jr., Boston.
34 *Experimental and Clinical Observations on Blood Pressure in Spinal Anesthesia. G. G. Smith, Boston.
35 Pituitary Extract as Hemostatic in Hemorrhages of Lungs. M. J. Konikow, Boston.

33. **Effect of Rowing on Heart.**—The authors found that there is little difference in the size of the heart of men who have been rowing for two or four years and men who have been rowing over ten years. The hearts of these two groups are slightly larger than the hearts of a younger group who have not as yet participated in serious competitive rowing. These differences seem to be explained by the differences in age and development. The only conclusion drawn from this study is that prolonged participation in rowing under the system now in vogue at Harvard University and the Union Boat Club of Boston does not materially increase the size of the heart when the heart is sound at the beginning.

34. **Blood Pressure in Spinal Anesthesia.**—Smith claims that the blood pressure can be lowered as much by spinal anesthesia as by section of the cord in the cervical region. In his experimental work the greatest fall was caused by injection of the drug in the thoracic region, in which the vasomotor fibers which supply the splanchnic area leave the cord. This part of the vasomotor mechanism is the first affected by the drug when the injection is made in the lumbar region. The extent of diffusion of the drug within the dural sac appears to be influenced more by the bulk of the solution injected than by any other one factor. A given amount of drug in a concentrated solution diffuses less and consequently lowers blood pressure less than does the same amount of drug in a more dilute solution. The greatest effects on blood pressure were noted when epinephrin was combined with novocain. Entire fixation of the drug does not take place within twenty minutes after the time of injection. When a solution of greater specific gravity than spinal fluid is used, the extent of diffusion may be increased by gravity. Attempts to raise the blood pressure by the intravenous injection of pituitary extract or epinephrin gave only a transient rise.

Canadian Medical Association Journal, Toronto

September, V, No. 9, pp. 757-852

36 Appendicitis; Appreciation of Ochsner Method. E. S. Hicks, Brantford.
37 Bacteriology of Hodgkin's Disease. L. J. Rhea, Montreal.
38 Practical Value of Knowledge of Sympathetic and Autonomic Nervous System. J. W. McIntosh, Vancouver, B. C.
39 Tissue Respiration in Light of Recent Research. D. F. Harris, Halifax, N. S.
40 Foreign Body in Esophagus. H. H. McNally, Fredericton, N. B.
41 Unusual Case of Needle Lodged in Duodenum. W. A. Lincoln, Calgary.

Florida Medical Association Journal, Jacksonville

September, II, No. 3, pp. 65-96

42 Relaxed Vaginal Outlet, Its Diagnosis and Treatment. G. R. Holden, Jacksonville.
43 Conservation of Tissue and Function in Amputations. W. R. McKinley, Columbus, Miss.
44 Suprapubic Prostatectomy. J. C. Vinson, Tampa.
45 Locating Surgical Border-Line Gastro-Intestinal Cases. G. M. Niles, Atlanta, Ga.

Indiana State Medical Association Journal, Fort Wayne

September, VIII, No. 9, pp. 413-454

46 Is Diagnosis of Sarcoma Sufficient? M. F. Porter, Fort Wayne.
47 Episiotomy, Perineal Safety Measure. C. J. Rothschild, Fort Wayne.
48 Papillomas of Bladder. J. C. Fleming, Elkhart.
49 Complete Intraplacental Uterine Rupture During Labor. J. M. Stoddard, Anderson.

Journal of Cutaneous Diseases, New York

September, XXXIII, No. 9, pp. 611-666

50 *Spinocelled Cancers of Skin. H. H. Hazen, Washington, D. C.
51 Human Serum and Blood in Treatment of Psoriasis and Other Skin Diseases. H. Fox, New York.
52 *Treatment of Psoriasis with Autogenous Serum. W. B. Trimble and J. J. Rothwell, New York.
53 New Apparatus for Intravenous Administration of Neosalvarsan in Concentrated Solution. L. Thompson, Hot Springs, Ark.

50. **Spinocelled Cancers of Skin.**—There are, says Hazen, two varieties of prickle-celled cancer, a malignant type and a warty type, that will metastasize only under special circumstances. These growths always arise from abnormalities, hence many of them could be prevented, or at least operated on at an early date. Spinocelled cancers are apt to metastasize to the regional glands, even at an early date. The best results have come from the local removal of the growth, together with the radical removal of the draining

lymphatic glands. Any form of treatment which does not permit of the proper diagnosis and differentiation of the primary growth is to be deplored. At this point it would be well to point out that many basal-celled cancers can be clearly distinguished in the gross.

52. **Psoriasis Treated with Autogenous Serum.**—Fifty cases of psoriasis were selected by Trimble and Rothwell; thirty of these were given the serum treatments, the remaining twenty being used as controls. The controls were divided into two groups of ten each, one group being placed on 2 per cent. chrysarobin ointment, and the other on a 10 per cent. white precipitate of mercury ointment. An ointment of 2 per cent. chrysarobin was given to each patient taking the serum injections, after the sixth treatment, but so far as possible the injections were continued until the total number reached ten. In twenty-eight of the thirty patients receiving the serum injections, there was absolutely no change in the eruption before the salve was prescribed; after this time, resolution progressed with fair rapidity. The control cases furnished some interesting points. To ten of these was given 2 per cent. chrysarobin ointment, so as to compare the rapidity of action with and without the serum injections; ten also were put on the unguentum hydrargyri ammoniati, 10 per cent., to see how the rapidity of action compared with the weak chrysarobin applications. It has been almost a routine measure in the clinic to give all cases of psoriasis, at the first visit, the unguentum hydrargyri ammoniati. In a certain small percentage of mild or early cases this application would remove the lesions; if so, then the disagreeable staining, irritating chrysarobin would be avoided; if not, the case was put on the chrysarobin ointment. The controls using the white precipitate of mercury ointment acted about as was expected; some were benefited and some were not, but the comparison sought was decided. The mercury ointment was not to be compared in efficiency with the 2 per cent. chrysarobin.

The controls using the chrysarobin furnished some valuable information and caused the greatest surprise. First, the action of the drug was about the same in the control cases as in the serum group. If there was any difference, it was in favor of the control group; they seemed to progress more favorably and effectively than the injection cases; this may have been a coincidence due to individual tendencies. The surprising observation was that the 2 per cent. chrysarobin seemed to act quite rapidly and effectively and to produce dermatitis with the same frequency as the same ointment in 10 per cent. strength. The psoriasis lesions would vanish, leaving the same white areas and the same surrounding dermatitis as when a 10 per cent. ointment was used. In one or two instances a marked dermatitis was produced with the supposedly weak ointment. In one of the serum cases, a young woman, the 2 per cent. salve produced an intense dermatitis, the redness, heat and edema of the skin causing great tenderness on pressure, and being sufficient to cause sleepless nights.

Lancet-Clinic, Cincinnati

September 11, CXIV, No. 11, pp. 221-240

54 "Rochester 'Live Little Longer' Plan in Operation." M. E. Bingeman, Rochester, N. Y.
55 Hysterectomy from Viewpoint of General Surgeon. W. D. Haines, Cincinnati.
56 Five Years' Experience with Salvarsan in Syphilis. A. Nelken, New Orleans.

September 18, No. 12, pp. 241-260

57 Anesthetics. C. S. Skaggs, East St. Louis, Ill.
58 Barany Tests as Used in Differential Diagnosis of Cerebellar and Internal Ear Disease. C. E. Shinkle, Cincinnati.
59 Tuberculous Meningitis in Adults; Report of Case. H. T. Ratterman, Cincinnati.
60 Policyholders as Medium for Increasing Longevity. W. F. Blackford, Louisville, Ky.

Medical Record, New York

October 2, LXXXVIII, No. 14, pp. 551-592

61 School-Spread of Contagious Diseases and How to Control It. M. Solis-Cohen, Philadelphia.
62 Intraspinal Treatment in Syphilis; Spinal Fluid Findings. L. A. Levison, Toledo.
63 Importance of Personal Equation in Treatment of Tuberculous. W. H. Swan, Colorado Springs, Colo.
64 Diagnosis and Treatment of Gastric Neuroses. S. Wendkos, Philadelphia.
65 *Treatment of Acute Epididymitis by Aspiratory Puncture. H. W. E. Walther, New Orleans.
66 Rocky Mountain Spotted Fever Treated with Suprarenal Secretion. M. H. Smith, Basin, Wyo.
67 What Patients with Toxic Goiter Should Do and What They Should Not Do. G. P. Coopernail, Bedford.

65. **Treatment of Acute Epididymitis.**—The technic Walther has adopted is as follows: The scrotum is prepared aseptically as for any operation; the practice being to shave the skin, thoroughly cleanse the same with green soap and sterile water, and then paint the site of puncture with tincture of iodin. The affected testis is then firmly grasped with one hand, the epididymis to be punctured pointing uppermost, and the skin over the selected area of entrance of the needle is put on tension. A sharp-pointed, fairly large needle which is connected to a 10 c.c. record syringe, and which has been previously sterilized, is then thrust through the skin of the scrotum into the substance of the epididymis for one-half to two-thirds inch, and then the attempt is made to aspirate gently some of the seropurulent content. By withdrawing the needle slowly aspirating all the while, one will often succeed in obtaining fluid from the different levels in the gland when the same would not be gotten if the needle was held in only one plane. Usually two or three punctures at different points in the affected organ are made. The wounds are then sealed with a collodion dressing and a suspensory applied to the scrotum. Confinement to bed is not necessary. The only anesthetic used has been that of spraying locally the site of puncture with ethyl chlorid to freeze the part. As a rule, little fluid is withdrawn. The effect of the aspiration, however, becomes manifest by an almost immediate relief from pain, and within six to twelve hours the swelling in the gland and the fever have diminished considerably.

Missouri State Medical Association Journal, St. Louis

September, XII, No. 9, pp. 399-432

68 Congenital Heart Lesions in Infancy and Childhood. E. H. Schorer, Kansas City.
69 Renal Tuberculosis. J. P. Henderson, Kansas City.
70 Kidney Tuberculosis; Special Reference to Some Inoperable Cases. C. E. Burford, St. Louis.
71 Treatment of Congenital Club-Foot. C. A. Stone, St. Louis.
72 Suppurations of Kidney. T. A. Blackmore, Windsor.
73 Roentgenotherapy for Angiomas; Report of Cases. E. H. Skinner, Kansas City.
74 Motility of Aortic Arch. G. H. Hoxie, Kansas City.
75 Clinical Contribution to Study of Uterine Fibroids. M. H. McLean, St. Louis.
76 Cystoscopic Report of Case of Hematuria. M. Goldman, Kansas City.
77 Surgical Treatment of Goiter. A. C. Crank, Canton.

New Mexico Medical Journal, Las Cruces

September, XIV, No. 6, pp. 161-200

78 Suggestion with Regard to Medical Treatment of Cancer. E. C. Prentiss, El Paso, Tex.
79 Medical Organization and Public Health. W. R. Joyner, Roswell.

New York Medical Journal

October 2, CII, No. 14, pp. 689-736

80 New Method for Treatment of Inoperable Cancer. S. P. Beebe, New York.
81 Autolysin Treatment of Cancer of Light of Proteomorphic Theory. H. S. Williams and J. W. Beveridge, New York.
82 *Infantile Eczema. H. W. Cheney, Chicago.
83 Repair of Female Perineum. A. S. Brinkley, Richmond, Va.
84 Backache. H. Weinstein, New York.
85 Advantages of Quinin and Urea Hydrochlorid as Local Anesthetic. J. L. Amster, New York.
86 Management of Obstetric Case. S. J. Druskin, New York.
87 Radium in Rhinoscleroma. J. Guttman, New York.
88 Pituitary Extract in Obstetrics. L. J. Friedman, New York.
89 General Miliary Tuberculosis with Unusual Spinal Fluid Findings. J. Roby and A. Kaiser, Rochester.

82. **Infantile Eczema.**—In speaking of the treatment of this disease, Cheney emphasizes that external applications are not to be considered first. First thought and consideration should be the nutrition of the child, and a careful inquiry as to the food which has been given will give us a clue to proper treatment. If it is a breast-fed baby, one may often find that it has been fed at frequent and irregular intervals,

perhaps every two hours, and the mother has an oversupply of rich milk. For such a baby endeavor to do two things; first, decrease the abundance and richness of the mother's milk, and second, cut down the baby's supply. For the mother, advise more exercise and a lessening of the quantity of food which she takes, omitting particularly milk, cream and the cereals. For the baby, prescribe regularity of nursing and long intervals between feedings. The baby should not be nursed oftener than once in four hours, and not allowed to stay at the breast too long. The food can be diluted by giving the baby 1 or 2 ounces of water or barley water just before each nursing, partly filling its stomach, and thus it will not take so great a quantity of milk. Some cases persist after all these trials. They are probably cases in which there is an intolerance for some ingredient in the mother's milk, and for such a wet nurse may be tried, or if one can make the baby fairly comfortable, worry along for a few months until the child is old enough for other food. For the bottle-fed baby, vary the food constituents to suit each case. Cases which still resist all such feeding often can be cured by using the so-called albumin milk.

New York State Journal of Medicine

September, XV, No. 9, pp. 327-372

90 Metabolic Studies in Diabetes. F. M. Allen, New York.
91 Treatment of Fibroids of Uterus by Roentgen Rays. G. E. Pfahler, Philadelphia.
92 Twilight Sleep. A. J. Rongy, New York.
93 *Experiences with Malt Soup for Institution Marasmus. T. S. Southworth, New York.
94 *Blood Coagulation in Infancy. H. L. K. Shaw and F. J. Williams, Albany.
95 Treatment of Rigid Rotary Lateral Curvature of Spine by New Brace. S. Kleinberg, New York.
96 *Reinforcing Paralytic Flail Joints by Intra-Articular Silk Strands to Limit Motion and Increase Stability. B. Bartow, Buffalo.
97 Present Status of Tuberculin Therapy in Ocular Tuberculosis. W. B. Weidler, New York.

93. **Experiences with Malt Soup.**—The method adapted by Southworth was to select from day to day those cases whose condition was most critical, and to employ for each infant, in making up its daily supply of food, the number of ounces of milk, or top milk, which it would properly receive in an ordinary suitable formula. To this, and the requisite amount of water, was added the malt soup extract and wheat flour, usually in the proportion of one level tablespoonful of each for approximately each 10 ounces of the total food. The mixture was brought slowly to a boil to gelatinize the starch, and was then strained, cooled and bottled. As a life saver, or at least prolonger of life, the malt soup mixtures proved successful in nearly every instance in which they were given. The prophecy made at the start that flocculent white and green stools would become smooth and brownish within twenty-four to forty-eight hours, was, as a rule, justified. Infants who seemed doomed, ceased to lose weight, and in many instances promptly showed moderate gains.

94. **Blood Coagulation in Infancy.**—Shaw and Williams made examinations in 108 healthy infants under 2 years of age by this method, and found the determinations were between one minute fifteen seconds and one minute forty-eight seconds, and the average coagulation time was one minute thirty seconds, which is a slightly shorter time than in adults. They used the coagulometer of Russel and Brodie, as modified by Boggs and described by Emerson, consisting of a moist chamber with a glass bottom which can be placed on the stage of the microscope.

96. **Reinforcing Paralytic Flail Joints.**—The main ideas in the plan of treatment employed by Bartow are an attempt to provide better opportunities than are contained in the available operative methods for relieving these forms of disability, and also their timely employment to lessen the amount of muscular deterioration depending on disuse of a limb. he purpose kept in view has been to formulate a plan conistent with use in both the early and late periods of residual aralysis and also in young patients if desired. The procedure does not mutilate the joint, and as it causes no interference with the muscle supply, does not jeopardize the chance of improvement or recovery by natural processes inasfar as this is possible. Ankylosis, unless desired, is not the outcome of this procedure, but limitation only. At the same time the procedure possesses a range in its application whereby its repetition will safely prove additional limitation of any required degree. In about 150 cases in which this plan has been used, there has been no mortality, and in no instance an infection of a joint. This plan, proposed by Bartow about three years ago, contemplates fastening the paralytic flail joint by means of paraffined silk strands, inserted within the joint, to limit motion and promote stability for weight carrying.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

September, XXI, No. 3, pp. 93-137

98 First Aid Treatment of Fractures. J. C. Motley, Abingdon.
99 Plea for Reduction of Death Rate from Cancer of Breast. B. C. Willis, Richmond.
100 Internationalized Profession. J. M. Northington, Boardman, N. C.

Public Health Journal, Toronto

September, VI, No. 9, pp. 421-473

101 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto.
102 Standardized Death Rate of British Columbia. W. E. Home.
103 Duties of Medical Officer of Health. J. W. S. McCullough, Toronto.
104 Cheap Food for Babies. R. J. Ewart.

Tennessee State Medical Association Journal, Nashville

September, VIII, No. 5, pp. 205-249

105 Acute and Chronic Rheumatism. F. Billings, Chicago.
106 Colossal Goiters. W. D. Haggard, Nashville.
107 Etiology and Experimental Production of Appendicitis, Ulcer of Stomach and Cholecystitis. E. C. Rosenow, Rochester, Minn.
108 Management of Pellagra. B. G. Tucker, Nashville.
109 Hospital Situation in Tennessee. E. C. Ellett, Memphis.
110 Cases of Removal of Foreign Bodies from Lower Respiratory Tract and Esophagus. W. L. Simpson, Memphis.
111 Eugenics and Marriage. L. A. Stone, Memphis.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 11, II, No. 2854, pp. 389-424

1 *Acidosis in Diabetes Mellitus. A. P. Beddard, M. S. Pembrey and E. I. Spriggs.
2 *Significance of Alveolar Carbon Dioxid Determinations in Treatment and Prognosis of Diabetes. E. P. Poulton.
3 Paroxysmal Hemoglobinuria; Report of Case. E. Emrys-Roberts.
4 Congenital Dislocation of Right Foot with Almost Complete Absence of Right Fibula. E. M. Sympson.

1. **Acidosis in Diabetes.**—The chief practical result of the work done by Guy's Hospital during the past twelve years on the question of acidosis in diabetes has been the demonstration that analyses of the carbon dioxid in the alveolar air of the lungs afford an index of the degree of acidosis and a guide in treatment and prognosis. The authors show that in cases of diabetes there is a relation between the alkalinity of the serum and the amount of carbon dioxid in the venous blood; the two rise and fall together without being actually parallel. In the nondiabetic cases, which were taken for the purpose of control, the alkalinity of the serum ranged from twenty-fifth-normal to thirtieth-normal. They also determined the tension of the gases of the blood circulating in the body. The means of fifty observations on ten men are 5.57 volumes per cent. of carbon dioxid and 14.89 of oxygen; the maxima are 6.11 and 15.59, the minima 4.87 and 13.91. Diabetic patients may have alveolar pressures of carbon dioxid, which are within the normal limits, although they are passing large quantities of sugar in the urine. When there is acidosis the carbon dioxid falls, and in diabetic coma reaches as low a figure as 1 or 2 volumes per cent. If under treatment with sodium bicarbonate the patient recovers, the pressure of carbon dioxid may gradually rise to the normal level. Moreover, in diabetic patients, massive doses of sodium

bicarbonate may raise the pressure to a height beyond the normal range.

2. **Alveolar Carbon Dioxid Determinations in Treatment of Diabetes.**—The object of alveolar CO_2 determinations is to measure the severity of the acidosis. Hence, Poulton says, it is useless to apply the method he used when the urine, in a case of diabetes, gives a negative result with the nitroprussid test. Under these circumstances the alveolar CO_2 pressure will always fall within normal limits. However, when the urine contains acetone bodies, it is usually impossible from the nitroprussid or ferric chlorid tests alone, to say how severe the acidosis is. In any of these cases the alveolar CO_2 pressure is a sure guide. By its means cases can readily be divided into two categories: 1. The mild cases, in which the alveolar CO_2 pressure falls within normal limits; in these cases the prognosis with regard to coma is relatively good. 2. The severe cases in which the alveolar CO_2 is definitely lower than normal; here the utmost care must be taken to prevent the onset of coma. All the time the CO_2 is below normal the patient is, as it were, on the edge of a precipice, and any disturbance, such as sudden excitement or worry, or the administration of too rigid a diet, may push him over the edge.

In these cases the actual CO_2 pressure observed will give the measure of the danger. A value of 2 per cent. means that coma may supervene within twenty-four hours. A value of 3 or 4 per cent. is less dangerous; in the worst event, coma will not come on for at least two or three days. A sudden drop in the alveolar CO_2 is also of significance; it means that acidosis is increasing, and, though the immediate danger may not be great, there is always the possibility of a further increase until coma sets in. Again, it is possible to be misled if reliance is placed on symptoms alone, without determining the alveolar CO_2, because it not infrequently happens that the rapid onset of coma may be suspected from symptoms, even when the alveolar CO_2 still remains relatively high. It does not necessarily follow that the chance of averting coma is hopeless because a low CO_2 pressure is obtained. It may be kept off for a considerable time by judicious treatment.

Edinburgh Medical Journal

September, XV, No. 3, pp. 161-240

5 Lesions of Occipital Lobe and Affection of Vision. B. Bramwell.
6 Case of Rat-Bite Fever. T. Reid and J. Ritchie.
7 Wasting of Hand; Report of Six Cases. A. F. Hewat.
8 Two Cases of Bronchiectasis (Nontuberculous) Treated with Autogenous Vaccines. R. A. Fleming and H. J. C. Gibson.
9 Three Cases of Malignant Pustule of Anthrax. A. Miles.
10 Id. J. W. Dowden.

Journal of Obstetrics and Gynecology of the British Empire, London

March-May, XXVII, Nos. 3-5, pp. 105-150

11 Investigation of Causes which Determine Lie of Fetus in Utero. W. S. A. Griffith.
12 Prevalence of Congenital Syphilis Among Newborn of East End of London. P. Fildes.
13 Condition of Larynx and Trachea in Stillborn Infant and Its Bearing on Artificial Respiration. E. A. Barton.
14 Case of Torsion of Normal Ovary. F. J. F. Barrington.
15 Two Cases of Congenital Malformation of Female Genitalia. R. P. Beatty.

Lancet, London

September 11, II, No. 4802, pp. 587-634

16 Common Aims of Science and Humanity. A. Schuster.
17 *Pathology of Trench Frost-Bite. J. L. Smith, J. Ritchie and J. Dawson.
18 *Phenolization in Treatment of Gas Gangrene. L. Mencière.
19 Plastic Operation for Closing Certain Unhealed Gunshot Wounds of Head. C. W. G. Bryan.
20 Value of Prolonged Rest in Treatment of Heart Disease in Young. G. D. Barton.
21 Succus Allii (Garlic Juice) in Control of Suppuration in Wounds. A. D. S. Cooke and V. Gabriel.
22 *Strength of Picric Acid as Antiseptic. H. L. Tidy.

17. **Trench Frost-Bite.**—The observations recorded by the authors were made on rabbits. One of the hind feet was shaved and the animal was then placed in a wide glass cylinder standing on a layer of earth which was kept dry or moist according to requirements. By this means it was found possible to reproduce in the rabbits' feet the edematous swelling characteristic of trench frost-bite. In the first place, it was found that when the mud was both wet and cold the swelling became marked in from two to three days. On the other hand, when the mud was kept dry the cold had much less effect. Constriction of the limb by means of a band of sticking plaster increased the tendency to edema in the feet exposed to cold. This effect was not obtained by a single band, but when the band was taken twice round the limb the cold produced edema more rapidly.

The effect of applying warm water (at 37 C.) to the foot after it had been exposed to the cold was to increase the edema markedly. The swelling was confined to the parts which were directly exposed to the cold; it was less marked in the hind foot which had not been shaved. The animal with a swollen foot could still walk with it, though there was a certain amount of limping. On the other hand, the evidence of anesthesia in the foot was indefinite. When the rabbit was placed in its cage in the animal house after an experiment, the swelling rapidly disappeared and it walked about normally after twenty-four hours. The microscopic examination of the tissues showed that the chief effect of the cold was on the blood vessels. The lumen was dilated and contained a certain amount of fibrin deposit; the endothelium of the intima was swollen; there was vacuolation in the muscle fibers of the media, and there was an increase in the number of cells in the perivascular tissue. In certain cases, and especially when the edema had been present for a longer time, there was a diffuse infiltration of the swollen tissue with leukocytes. The changes in the nerves consisted in edematous swelling of the axis cylinders, and this appeared to be merely a part of the general edema of the feet. There was no sign of degeneration of the myelin. The nerve cells in the cord were normal.

18. **Phenolization in Treatment of Gas Gangrene.**—In order, Mencière says, to prevent infection, the best means is embalmment of the wound. The technic is as follows: Long incisions, cleaning up the gangrenous cavity, removal of splinters and fragments of clothing, extraction of the projectile, usually a bullet or piece of shell. Protect the neighboring parts with cotton-wool and compresses, which should be as impermeable as possible, block any counter opening with a tampon, or defer making a counter incision until after phenolization. Hold up the edges of the wound with Kocher's forceps in order to form a pit. Fill the wound to the brim with a solution of crystals of 9 parts pure phenol, 1 part alcohol, and with small tampons swab out all its recesses. Allow this solution to remain in contact with the wound for one to one and a half minutes. Avoid cauterization of the surrounding skin. This requires some dexterity. Remove all excess of phenol with tampons and by gentle irrigation with strong alcohol to the amount of 3 or 4 liters (5 to 7 pints). Then at the same sitting, embalm with 150 to 200 gm. (6 to 8 ounces) of a solution consisting of 1 liter ether, 10 gm. each of iodoform, guaiacol, eucalyptol, 30 gm. balsam of Peru, and 100 c.c. 90 per cent. alcohol.

22. **Picric Acid as Antiseptic.**—Tidy found experimentally that a 0.165 per cent. solution of picric acid has the same bactericidal powers toward the culture of typhoid bacteria as has the standard 1 per cent. solution of phenol. Thus the Rideal-Walker phenol coefficient of picric acid is exactly 6.

Archives des Maladies du Cœur, etc., Paris

September, VIII, No. 9, pp. 281-316

23 Paroxysmal Premature Contractions of the Heart in Wounded Soldier. (Crises extrasystoliques provoquées par les exercices physiques chez un soldat presentant des lésions multiples des nerfs craniens.) O. Josué and J. Heitz.
24 False Alternation of Weak and Strong Beats of Heart and Pulmonary Artery. (Fausse alternance du cœur et de l'artère pulmonaire d'origine complexe.) C. Pezzi.

Bulletin de l'Académie de Médecine, Paris

August 24, LXXIV, No. 34, pp. 205-224

25 Mixed Vaccines for Typhoid and Paratyphoid. (Vaccinations antityphoidiques et antiparatyphoidiques, mixtes, doubles ou triples.) F. Widal.

been labeled neurotic or hysteric, as nothing to suggest gallstone disease can be discovered in them, but small amounts of sugar are found in the urine, and the assumption of pancreatitis explains the above symptoms. The gradual aggravation of the symptoms and the increasing amounts of sugar in the urine in one such case gave the warning for terminating the pregnancy.

There is one case on record in obstetric annals of necrosis of the pancreas following the puerperium, and surgeons have casually mentioned in a number of cases that the women had borne a child not long before. Some mention that the women had had "gallstone colics" before, but the biliary apparatus was found normal. There can be no question that acute and chronic gynecologic affections, entailing adhesions with the omentum or thrombosis in the veins of the omentum or mesentery, may lead to necrosis of the pancreas. This is especially liable to follow a gynecologic operation.

In conclusion, Prochownick states that the literature and his own experience confirm the close physiologic connection between the pancreas and the internal genital organs, but further research is needed in this line. Functionally, also, we can assume a connection between the pancreas and glucosuria in pregnant women and the severer forms of incoercible vomiting. The data already available warn the gynecologist of the necessity for special care in operating not to leave conditions at any point that might favor thrombosis or embolism in the veins of the omentum or mesentery.

68. **Liver Functioning in the Pregnant.**—Bauch applied the galactose alimentary test systematically to twenty-two pregnant women. The responses were constantly within normal range except in one case in which a pathologically high sugar content in the blood before the test increased under the galactose.

Münchener medizinische Wochenschrift, Munich

August 31, LXII, No. 35, pp. 1173-1208

70 *Mechanism of the Agglutination Reaction. (Zur Theorie der Gruber-Widalschen Reaktion.) B. Stuber.
71 Treatment of Pulmonary Tuberculosis with Intensive Red Light. H. Gerhartz.
72 *Convalescent Serotherapy in Scarlet Fever. (Serumbehandlung des Scharlachs.) E. Reiss and J. Hertz.
73 Origin of Hard Traumatic Edema of Back of Hand. K. Stromeyer.
74 *Sensitive Test for Mercury in the Urine. M. Perelstein and J. Abelin.
75 *Early Diagnosis of Tuberculosis of the Vertebrae. (Frühdiagnose der Wirbeltuberkulose.) T. Janssen.
76 Clinical Phenomena and Operative Treatment of Aneurysms. H. Lengnick and O. Weiss.
77 Treatment of Wounds of the Eye in War. (Der Wert der Bindehautdeckung im Kriege.) R. Cords.
78 Wounds of the Skull. (Erfahrungen über Schädelschusse; Bedeutung des Röntgenbildes für die Schädelchirurgie.) E. Joseph.
79 Vibrio Like That of Cholera Found in Sausage. F. Kutscher.
80 Culture Medium for Meningococci. F. Kutscher.
81 Recovery After Removal of Shrapnel Ball in Right Ventricle. (Schrapnellkugel in der rechten Herzkammer.) R. Freund and C. Caspersohn.
82 Wounds of the Face Involving the Nasal Cavity. (Gesichtsschüsse mit Beteiligung der Nasenhöhle.) G. Krebs.
83 Emergency Orthopedics. (Apparate zur Kriegsorthopädie.) A. Heymann.
84 Medicinal Antivermin Arm and Leg Bands. (Imprägnierte Schutzringe gegen Ungeziefer.) R. Bohlmann.

70. **Theoretical Explanation of Agglutination Test.**—Stuber describes his personal research on this phenomenon of immunization which, he is convinced, has to do with fats rather than albuminous substances. Testimony is accumulating more and more, he asserts, in regard to the unreliability of the agglutination test, and he was himself able to induce a positive agglutination response with the most heterogeneous bacteria. It was also positive in dysentery in Gaehtgens' research. There is, however, a specific agglutination titer, and precision in the diagnosis of typhoid can be obtained only when the highest titer of possible agglutination is determined for a large number of typhoid cases and an average taken as the standard to differentiate typhoid. There is much to sustain the assumption that the fats are the most amenable of all substances to chemical reactions. The albumin molecule seems to act merely as the transporting molecule for the chemically readily reacting fat cleavage products. The response to the agglutination test seems to be a quantitative specific process with a relative chemical identity of the bacterial cell.

72. **Serotherapy of Scarlet Fever.**—Reiss and Hertz used the mixed serum from several scarlet fever convalescents, injected it intravenously in large doses, and declare that their further experience with this form of serotherapy has fully confirmed its preeminent efficacy, actually life saving in many cases. The dose has to be at least 50 c.c. for children and 100 c.c. for adults. The injections have to be commenced before the fourth or fifth day to be promptly effectual. Ordinary serum sometimes produced the same effect as the convalescent serum, but this was not always the case, and hence it is not to be depended on. Normal horse serum seemed entirely impotent. They took the serum from the donors between the eighteenth and twenty-fourth days, after negative Wassermann tests and excluding tuberculosis and septic cases. About 100 c.c. of blood can be drawn for the purpose from older children and 200 c.c. from adults. The indications for this serotherapy are the severer toxic form of scarlet fever, the pulse small and irregular with cyanosis, delirium and restlessness. On the other hand, when the toxic condition is the result of secondary infection, this serotherapy is comparatively useless.

74. **Determination of Small Amounts of Mercury in the Urine.**—The test is based on precipitation of the mercury by means of basic iron acetate. The findings with this and other tests are tabulated for comparison in forty-two cases, all confirming the extreme delicacy of the test.

75. **Early Diagnosis of Tuberculosis of the Spine.**—Janssen comments on the fact that vertebral tuberculous lesions are so seldom recognized in an early stage. Irreparable damage is usually wrought before the disease process is suspected. Much is gained if the physician even thinks of the possibility of tuberculosis of the spine instead of ascribing the symptoms to rheumatism, neuralgia or lumbago. He relates two cases in which massage, etc., were applied for assumed lumbago with eventual disastrous results. In other cases a gravity abscess from a vertebral tuberculous process simulated appendicitis; appendectomy led to no relief, and not until several months later was the case explained by the manifest vertebral process. The tenderness in the cases of this kind was not at McBurney's point, but along the course of the ilio-inguinal nerve. On the basis of the mistaken diagnosis of sciatica, treatment was instituted in some by baths, electricity, etc., which directly aggravated the tuberculous process beyond repair. Pain in the back on long standing should suggest possible tuberculosis of the spine, or even slight discomfort in the back on standing quietly or sitting at table. This was the very earliest symptom in many cases, and suggested vertebral involvement when found in the afebrile tuberculous. When there is backache after a long walk the process is apt to be more advanced. The pain is felt at some point in the spine, with also discomfort at the upper and lower ends of the spine. These pains after walking may be referred to the region on each or one side of the spine, and they may be mistaken for pleurisy, or there may be a kind of girdle sensation; this strongly suggests vertebral disease. When it is located low down, there may be pains in the lower abdomen, predominantly in the ilio-inguinal region, which may also be tender.

Tenderness along the inner margin of the ilium and the farther course of the nerve is more characteristic than pain in the sciatic or other nerves. Pain and tenderness increase after long walking and, if the temperature rises, the picture of appendicitis may be deceptively simulated. He has only rarely encountered spasmodic contracture of the long muscles of the back in the early cases or pain in the spine when the head is struck. Roentgenoscopy is advisable in all cases, but is seldom very instructive in the early stages. Conservative measures are of little use unless supplemented by immobilization. He rarely uses a plaster cast in the early stages, preferring a sail-cloth stretcher and husk mattress, (*Hirsespreu*), moving the patient always on the stretcher. After an interval he has the patient lie prone, raising the upper part of the body a trifle to correct the tendency to gibbus. General heliotherapy is a useful adjuvant. A complete cure is usually realized in time in the majority of cases, and striking results have been obtained even in advanced cases with pronounced paralysis.

Wiener klinische Wochenschrift, Vienna

August 5, XXVIII, No. 31, pp. 829-852

85 Trophic Disturbances with Gunshot Wounds of Peripheral Nerves. F. Steinberg.
86 Diagnosis of Urethral Gonorrhea in Women and Girls. A. Gluck.
87 Plaster Casts That Repel Vermin. (Zur Frage der Läusebekampfung.) N. Swoboda.
88 Prophylaxis of Venereal Disease After the War. B. Lipschutz.

August 12, No. 32, pp. 853-880

89 Immunization Against Dysentery with Toxin-Antitoxin Mixtures. B. Busson.
90 Typhus at Przemysl in the Spring of 1915. B. Lipschutz.
91 Symmetrical Gangrene of the Skin of the Face in Terminal Phase of Tuberculosis. H. Z. v. Zellenberg.
92 Bayonet Wounds of the Diaphragm. (Stichverletzungen des Zwerchfells durch das Seitengewehr.) H. Hintersfoisser.
93 Vaccinal Immunity. L. Unger. Commenced in No. 31.

Zentralblatt für Chirurgie, Leipzig

September 4, XLII, No. 36, pp. 649-672

94 *Air in the Skull After Shrapnel Wound. (Die intrazerebrale Pneumatokele.) L. Kredel.

94. **Air in the Skull.**—Kredel remarks that an accumulation of air in the skull after a gunshot or shell wound is one of the new clinical pictures encountered in this war. Duken has reported two such cases of intracranial pneumatocele, as he called them, and Kredel here reports another with the Roentgen findings before and after operative relief. In his case the term intracerebral pneumatocele is more appropriate. The symptoms were those of pressure on the frontal lobe. Nothing to suggest a valve action could be discovered.

Zentralblatt für Gynäkologie, Leipzig

September 4, XXXIX, No. 36, pp. 627-650

95 *Twenty-Eight Years of Experience with Uterine Cancers. (Behandlung und Statistik des Gebärmutterkrebses im Kleinbetrieb.) L. Prochownick.

95. **Uterine Cancer.**—Prochownick here reviews his life work in this line, recalling the various phases of treatment through which this led him in the course of his long practice, from almost absolute therapeutic nihilism through the radical operative era down to the conservative era ushered in by radiotherapy. Between 1882 and 1910 he performed 328 operations in 536 cases of uterine cancer, and at the very least he has permanently cured 8 per cent. of the women. Further improvement must be along the lines of radiotherapy, in particular for the uterine cancers which develop so slowly and without symptoms that they are already inoperable when first seen.

Zentralblatt für innere Medizin, Leipzig

September 4, XXXVI, No. 36, pp. 565-580

96 *Recurring Tetanus. H. Brandt.

96. **Recurring Tetanus.**—Sick reported once a case in which the patient had three separate attacks of tetanus at six weeks' intervals and recovered. Brandt here reports the case of a young officer who developed tetanus after a shrapnel wound of the foot, and recovered, but was still confined to bed for seven weeks when a new and more serious attack of tetanus developed. The incubation period was long, both times, and the man recovered.

Gazzetta degli Ospedali e delle Cliniche, Milan

August 26, XXXVI, No. 58, pp. 897-912

97 Management and Treatment of the Insane. (La cura della pazzia.) P. Ercolani.
98 Serotherapy in Scarlet Fever. (Il siero Marpmann nella cura della scarlattina.) V. Russo.

September 1, No. 59, pp. 913-928

99 *Suprarenal Treatment in Nephritis. (Opoterapia surrenale e nefriti.) T. Silvestri.

99. **Suprarenal Treatment in Nephritis.**—Silvestri states that considerable work in the line of organotherapy in nephritis has been done in Italy. He here analyzes the results, especially with suprarenal treatment. Antonio gave small doses of epinephrin in thirty cases of scarlatinal nephritis in children, and with good results. Fede extols epinephrin by the mouth as a valuable aid in nephritis of any kind at any age, but says that the effect is more apparent in children, as the elasticity of the kidney tubules and glomeruli is greater, while the suprarenals are larger in proportion than in adults. All agree that the epinephrin makes up for the deficit from suprarenal insufficiency. Silvestri here reports some experimental research in this line and four clinical cases. His conclusions are that epinephrin is a most valuable aid in acute nephritis, but that it is of no use in chronic disease of the kidney, for reasons which he enumerates.

Pediatria, Naples

September, XXIII, No. 9, pp. 621-688

100 Lipase Content of the Organs. (Sul contenuto in lipasi degli organi.) A. Clerici.
101 *Treatment of Epidemic Meningitis. M. Ponticaccia.
102 Cyst in Mesocolon of Boy of 9. (Cisti linfatica multiloculare del mesocolon in un bambino.) U. de Conciliis.

101. **Epidemic Meningitis.**—Ponticaccia recently had seven cases of meningitis and in six no benefit from antimeningococcus serum was apparent. Two women died, as also a boy of 11, and a girl. The disease was mild in the fifth and sixth cases and the children recovered. The seventh patient was a boy of 10 with extremely severe meningitis and a germ resembling, but not identical with, the meningococcus was isolated from his spinal fluid. No benefit was apparent from serotherapy or other measures, but prompt and permanent improvement followed intraspinal injection of 1 c.c. of hydrogen peroxid in a 20 per cent. solution. After injection of 5 c.c. of this fluid, the boy fell at once into a calm sleep as if a narcotic had been given, and slept for six hours, while the temperature dropped from 40.8 C. to normal for two days, but then rose again. It subsided anew under repetition of the injection, and the third day he was given 5 c.c. of a mixture of equal parts of hydrogen peroxid and distilled water, thus 2.5 c.c. H_2O_2. Recovery was soon complete.

Policlinico, Rome

September 5, XXII, No. 36, pp. 1197-1228

103 Typhus. (Il tifo esantematico o tifo degli accampamenti.) P. Sabella. Commenced in No. 35.

Medical Section, No. 9, pp. 389-432

104 *Pathologic-Anatomic Studies of Hemolytic Jaundice. (Ittero emolitico.) P. Sisto.
105 Salvarsan in Treatment of Progressive Paralysis. V. Massarotti.

104. **Hemolytic Jaundice.**—Sisto's article is accompanied by a colored plate showing the findings in three typical cases. He discusses the necropsy findings in detail, especially in the bone marrow, spleen and biliary apparatus, and the evidences of destruction of the blood corpuscles in the spleen. He also reviews the history of hemolytic jaundice from Hayem-Minkowski-Chauffard to Widal, Gilbert and Banti. The results of splenectomy are throwing light on the pathogenesis of hemolytic icterus. Also the discovery that the disease may be installed and long under way before manifest jaundice appears.

Riforma Medica, Naples

September 4, XXX, No. 36, pp. 981-1008

106 Pathogenesis of Oxaluria. E. U. Fittipaldi.
107 Vaccination Against Typhoid. (Intorno alla clinica della vaccinazione antitifica.) G. Oliaro and A. Ceconi.
108 Arrest in Development in Consequence of Mitral Stenosis. (Sull' infantilismo mitralico.) L. Ferrannini. Commenced in No. 32.
109 Scientific Organization of Measures for Crippled Soldiers. L. Ferrannini.

Russkiy Vrach, Petrograd

XIV, No. 26, pp. 601-624

110 Rare Case of Splenic Infarct. E. N. Vinteler.
111 Case of Heart Block with Spasmodic Auricular Fibrillation. Y. S. Schwarzman.
112 Draining of Purulent Wounds. A. T. Berdiaeff.
113 *Honey in Diabetes Diet. A. Y. Davidoff.

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THE EFFICIENCY OF VARIOUS ANTITYPHOID VACCINES *

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For over a year the California State Board of Health has been manufacturing at the hygienic laboratory the Gay-Claypole[1] sensitized antityphoid vaccine and distributing it free to physicians. Data cards are sent with the vaccine and physicians are requested to describe reactions and complications and to report any cases of typhoid fever in those who have been vaccinated. When the data cards are not returned, a follow-up postal card is sent. Under this system reports of several cases of typhoid fever in vaccinated persons were received soon after the beginning of the distribution. The investigation here reported was undertaken to determine whether these failures were peculiar to the type of vaccine distributed by the state board of health and also to arrive at a more accurate idea of the value of antityphoid vaccination in the civil population.

The literature on antityphoid vaccination gives little information regarding its value under the conditions of ordinary civil life. For armies there is a rapidly increasing mass of evidence. In five sets of statistics for antityphoid vaccination in the British army, both during the campaigns in South Africa and in selected test-groups of soldiers in India,[2] there were large numbers of unvaccinated men to serve as controls by indicating the extent of the exposure and the relative protection of the vaccinated men. Among the unvaccinated there were from two to seven times as many cases of typhoid fever as among the vaccinated.

Vincent[3] reports more remarkable results for various bodies of troops in the French army. The typhoid morbidity among those vaccinated with a polyvalent vaccine killed with ether varied from nothing to 0.18 per thousand men, while among the unvaccinated it ranged from 2.22 to 225.61 per thousand. In the German army in the Herero campaign in southern West Africa in 1904 to 1907 there were twice as many cases among the unvaccinated as among the vaccinated.[4]

Brilliant success with typhoid vaccination is shown in the experience of our own army,[5] the morbidity being reduced to 0.03 per thousand men with no deaths. An almost complete absence of unvaccinated men to serve as controls makes it impossible to state just how far this success is due to improvement in the vaccine and in the method of administration.

There are three important factors which determine how much vaccination will reduce typhoid fever in a community:

1. The efficiency of the vaccination, as shown by the degree of immunity produced in the individual.
2. The proportion of vaccinated individuals in the community.
3. The extent of the exposure to typhoid infection, especially of exposure other than simple contact with individuals within the community.

In analyzing the success of vaccination in our army we cannot give all the credit to the first factor, which depends largely on the kind of vaccine and the method of administration, and also on the power of the individual to respond, because like results are not being obtained by similar methods in the civil population in places where the other factors are unfavorable. In the army the second factor must play a large part, because almost all the men are vaccinated and most of the individuals with whom the soldier comes in daily contact are immune and therefore unlikely to develop typhoid fever and to expose him to contact infection. There is, therefore, little chance for typhoid fever to spread in the army through contact even if it should in rare instances gain entrance to a body of thoroughly vaccinated troops. In the civil population we find that most of our failures are in persons who have lived in the same household with typhoid patients, who have nursed typhoid patients, or who have been exposed to some heavily polluted common food or water supply. The third factor is favorable in the army, especially in time of peace, as heavy and wholesale exposure is being prevented by scientific control of food and water supplies and of the general sanitation of camps and barracks. It is obvious that we cannot expect results similar to those in our army among the civil population where the percentage of the population vaccinated is small, and the exposure to contact infection correspondingly increased, and where there is often serious neglect of the supervision of public water, milk, and food supplies.

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* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Gay, F. P., and Claypole, E. J.: An Experimental Study of Methods of Prophylactic Immunization Against Typhoid Fever, Arch. Int. Med., November, 1914, p. 671.

[2] McWeeney, E. J.: Immunity Against Infectious Disease, with Special Reference to Antityphoid Inoculation, Lancet, London, Feb. 6, 1915, clxxxviii, 265. Firth, R. H., quoted by Russell, F. F.: Results of Antityphoid Vaccination in the Army in 1911, and Its Suitability for Use in Civil Communities, THE JOURNAL A. M. A., May 4, 1912, p. 1331.

[3] Vincent, H.: La vaccination antityphoidique; résultats donnés par l'emploi du vaccin polyvalent, Jour. med. franç., 1913, vi, 417; Sur la vaccination antityphique, Jour. State Med., 1912, xx, 321.

[4] Russell, F. F.: Results of Antityphoid Vaccination in the Army in 1911, and Its Suitability for Use in Civil Communities, THE JOURNAL A. M. A., May 4, 1912, p. 1331.

[5] Russell, F. F.: Antityphoid Vaccination in the Army During 1913, THE JOURNAL A. M. A., May 2, 1914, p. 1371.

In the civil population, nurses have been more generally immunized than any other class. The exposure of nurses is much greater than that of the general population. Joslin and Overlander[6] have estimated that a hospital nurse is about eight times as liable to contract typhoid fever as the ordinary citizen. Various reports on the immunization of nurses give morbidities in the vaccinated ranging from nothing to 10.7 per cent. and corresponding morbidities in the unvaccinated varying from 11.4 to 35.8 per cent.[7, 8]

In epidemics, immunization of the general population has been resorted to frequently. Vincent[3] reports two epidemics, comprising a total of 712 vaccinated persons with no cases, and 2,793 unvaccinated with a morbidity of 44.4 per thousand. Townsend[7] reports an epidemic in Torrington, Conn., where there was one case of typhoid among 400 vaccinated persons. In the Sloane Hospital in New York, in a food-borne epidemic[9] due to a typhoid carrier, there were seven cases (15.9 per cent.) among 44 persons who had been vaccinated with various makes of typhoid vaccine at various lengths of time before exposure. Among 30 unvaccinated persons there were six cases (20 per cent.). Spooner[10] reports a water-borne epidemic in which sixty-five persons were exposed, of whom 29 were vaccinated during the outbreak. Among the vaccinated, one case occurred immediately after the first inoculation (3.4 per cent.). Of the unvaccinated 19 were still well at the time of the vaccinating, and five of these (26.3 per cent.) developed typhoid fever. Wade and McDaniel[11] report an epidemic in an institution, one month after the completion of vaccination of the inmates, wherein 1,396 vaccinated persons had 37 cases of typhoid (2.6 per cent.) with 3 deaths, and 304 unvaccinated had 16 cases (5.2 per cent.) with 2 deaths.

There are many reports of vaccination after epidemics, but in a considerable number of them judgment of the efficacy of vaccination is clouded by the fact that while the immunization was being performed other measures were taken to stop the epidemic, for example, the chlorination of a polluted water supply.

Statistics of vaccination among the general public, in the absence of epidemics, are meager. A total record of 26,376 such vaccinations was collected from the literature, with 9 subsequent cases, or 0.34 per 1,000. Most of these were reported in an incidental way that led to the conclusion that no special inquiry had been made to discover cases among the vaccinated.

In a small town in Kentucky[12] there were five cases of typhoid fever in persons who had, within eighteen months, been given vaccines made by at least four different commercial laboratories. About 1,000 persons in the town had been vaccinated. Russell[13] reports absence of cases in 359 vaccinated children. Among 11,772 vaccinated employees of the Canadian Pacific Railway on the western lines there were only four cases and one death.[14]

In the literature the results of vaccination, varying from apparently complete protection to almost none, bring home the fact that the immunity is relative, and that the severity of the exposure determines to a large degree whether the immunized person will escape. Vaccination seems to be more effective against infection from a slightly polluted water supply or the ordinary contacts of our daily life than against infection from a heavily infected milk or food supply or from continuous close contact with an acute case of typhoid fever.

THE CALIFORNIA STATISTICS

To obtain information regarding the results of antityphoid vaccination in the civil population of California, a questionnaire was sent to 2,400 physicians. Replies were received from 815, and 218 of these had administered antityphoid vaccine to 8,124 patients.

In Table 1 are given the statistics so collected regarding failures to prevent typhoid fever. They are classified according to the type of vaccine and the manufacturer. All cases reported as typhoid fever and occurring at least thirty days and not more than two and one-half years after the first dose of vaccine are recorded as true failures.

TABLE 1.—ANTITYPHOID VACCINATION IN CALIFORNIA UP TO APRIL 1, 1915

Manufacturer of Vaccine	Type	Number Vaccinated	Cases among Vaccinated	True Failures	Failures per 1,000 Vaccinations	Deaths, True Failures	Deaths per 1,000 Vaccinations
State Board of Health and University of Calif.	Gay - Claypole, sensitized	4,927	32	21	4.3	2	0.41
B..................	Sensitized...	22	0	0	...	0	
Make not stated....	Sensitized...	18	0	0	...	0	
United States Army	Unsensitized	88	1	1	...	0	
A..................	Unsensitized	2,024	24	15	7.4	2	0.99
B..................	Unsensitized	168	3	3	...	0	
C..................	Unsensitized	188	1	1	...	0	
D..................	Unsensitized	15	0	0	...	0	
E..................	Unsensitized	4	0	0	...	0	
F..................	Unsensitized	55	0	0	...	0	
Four private laboratories	Unsensitized	228	0	0	...	0	
Make not stated....	Unsensitized	136	0	0	...	0	
Make not stated....	Not stated..	251	0	0	...	0	
Total sensitized..................		4,967	32	21	4.3	2	0.41
Total unsensitized..................		2,906	29	20	6.9	2	0.69
Unclassified..................		251	0	0	...	0	
Total..................		8,124	61	41	5.0	4	0.49

In Table 1 the letters A to E represent well-known commercial biologic laboratories. The letter F represents a municipal laboratory. In the beginning of the table are shown the statistics for the Gay-Claypole vaccine[1] manufactured and distributed at first by the department of pathology of the University of California, but after April 1, 1914, by the hygienic laboratory of the state board of health. The vaccine was made from five virulent strains recently isolated in California, and was sensitized, killed with alcohol, dried, ground, and suspended in weighed amounts in physiologic salt solution. The water-soluble substances were then removed and the sediment was again dried, weighed, and suspended. In the earlier lots of vaccine this last step was not a part of the process of manufacture, and five of the persons who later devel-

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6. Joslin, E. P., and Overlander, C. L.: Separate Nursing and Isolation in Typhoid Fever, Boston Med. and Surg. Jour., 1907, clvii, 427.

7. Townsend, J. H.: Antityphoid Vaccination, Am. Jour. Pub. Health, 1914, iv, 993.

8. Ebersole, R. E.: The Value of Typhoid Vaccination in Civil Communities, Med. Rec., New York, 1913, lxxxiv, 894.

9. Ogan, M. L.: Immunization in a Typhoid Outbreak in the Sloane Hospital for Women, New York Med. Jour., 1915, ci, 610.

10. Spooner, L. H.: Antityphoid Inoculation, The Journal A. M. A., Oct. 12, 1912, p. 1359.

11. Wade, E. M., and McDaniel, O.: Observations on the Widal Reaction Following the Administration of Typhoid Vaccine, Am. Jour. Pub. Health, 1915, v, 136.

12. Gaither, J. G.: Antityphoid Inoculation, Correspondence, The Journal A. M. A., Oct. 10, 1914, p. 1314.

13. Russell, F. F.: Antityphoid Vaccination in Children, The Journal A. M. A., Feb. 1, 1913, p. 344.

14. Medical News, Canada, The Journal A. M. A., March 27, 1915, p. 1086.

oped typhoid fever received this earlier vaccine. One of these five persons received a vaccine made from a single strain instead of from the five used in the present method.

The firm A which manufactured the greater part of the unsensitized vaccine used in the cases here reported on followed in essentials the United States Army method of manufacture and used the same typhoid culture (Rawlings).

In Table 2 are shown the intervals between the administration of the first dose of vaccine and the onset of typhoid fever in those vaccinated.

In using the table it must be kept in mind that the failures do not in all instances belong to the groups of vaccinations reported. All vaccinations reported, in answers to the questionnaire, as administered up to April 1, 1915, and all failures reported in these answers or afterward by letter up to June 21, 1915, are included in the tables without regard to whether the failures belonged strictly to the particular groups of vaccinations included in the answers to the questionnaire. In some cases the failures were reported by physicians other than those who did the vaccinating, and reports of all the corresponding vaccinations could not be obtained.

In determining whether cases were true failures the interval of time was counted from the date of the first dose of vaccine, because the methods of administration were not alike. The vaccine distributed by the state board of health was given at intervals of two or three days, while most of the other kinds were administered at intervals of ten days.

The basis for determining the diagnosis was in most cases not entirely satisfactory, especially as a positive Widal reaction is not proof of the diagnosis of typhoid fever in a vaccinated person. In all cases the symptoms were regarded by the attending physician as those of typhoid fever. In six of the patients who had received vaccine from the state board of health or the University of California a culture was obtained from the blood or at necropsy and in each case the organism obtained proved to be the typhoid bacillus. Blood cultures demonstrated the presence of the typhoid bacillus in the blood of three of the patients who had received the vaccine of Manufacturer A. In a few cases agglutination tests of the patient's serum were made with paratyphoid A and paratyphoid B bacilli, but with negative results. In a number of cases the diagnosis was strengthened by the fact that there were records of positive Widal reactions in unvaccinated patients in the same group of cases of typhoid fever.

TABLE 2.—INTERVALS BETWEEN THE FIRST DOSE OF VACCINE AND THE ONSET OF TYPHOID FEVER

Manufacturer	Interrupted Vaccinations, Two Doses Only	Early Cases 1 to 30 Days	True Failures				
			30 to 60 Days	2 to 6 Mos.	6 to 12 Mos.	12 to 30 Mos.	Totals
State Board of Health and University of California	1 (17 mos.)	10	6	4*	4	7	32
United States Army	....	...	....	..	...	1	1
A...............	1 (31 days)	8	4	3	5	3†	24
B...............	....	...	....	1	1	1	3
C...............	....	...	....	..	...	1	1
Total.........	2	18	10	8	10	13	61

* Includes one case completely vaccinated twice, once fourteen months, and again three months before the onset, and infected in a laboratory.

† One case, a nurse, vaccinated sixteen months before the onset, gave a history of having had typhoid fever twelve years before.

In Table 3 are shown estimates of the severity of the attacks of typhoid fever in the cases classed as true failures of the vaccination.

EXTENT OF EXPOSURE

The extent of exposure of the vaccinated persons was so very much greater than the average exposure of the citizens of the state, that in spite of the protection due to the vaccination, the typhoid death rate among vaccinated persons was considerably greater than the typhoid death rate for the state taken as a whole. This is due to the fact that most of the vaccine is sent to the parts of the state having the most typhoid fever and at the seasons of greatest exposure, when the appearance of cases warns the public of the danger of infection. The unusual extent of exposure is indicated by the fact that 824 of the vaccinated persons were nurses, most of them in charge of typhoid cases; 953 were vaccinated in the presence of typhoid fever epidemics; 28 were physicians; 15 were workers in bacteriologic laboratories; and 608 were members of households in which there were acute cases of typhoid fever. Among the 41 true failures, the vaccinated persons were exposed as follows: In 7 cases they received their infection from acute cases of typhoid fever in the same households; in 8 cases they were nurses in charge of cases of typhoid fever; in 2 cases they were bacteriologists working with virulent typhoid cultures; in 6 cases they were exposed to polluted water in water-borne outbreaks; in 5 cases they were exposed in a milk-borne epidemic; one case was that of a physician; and in 12 cases no special history of exposure was obtained. The exposures were similar in the cases of failure after the use of the sensitized and of the unsensitized vaccines. Unfortunately there is no way of estimating with any approach to exactness how many of the vaccinated persons would have developed typhoid fever if not vaccinated.

TABLE 3.—SEVERITY OF TYPHOID FEVER IN FORTY-ONE CASES CLASSED AS TRUE FAILURES

Manufacturer	Mild	Moderate	Severe	Hemorrhage	Perforation of Intestines	Death
State Board of Health and University of Calif.	12	3	6	2	2	2
United States Army	...	...	1			
A..................	4	4	7	1	0	2
B..................	...	3				
C..................	...	...	1			
Total...........	16	10	15	3	2	4

The extent of the exposure seems to be one of the most important of the factors which determine whether or not a vaccinated person will develop typhoid fever. In a food-borne outbreak like that at the Sloane Hospital in New York[9] vaccination seems to give inadequate protection, while in the more usual exposures of less severity, we can expect a considerable degree of protection. An instance in which vaccination was apparently of little value is furnished by a recent milk-borne typhoid epidemic in California. On the milk-route under suspicion there were 643 persons, of whom 17 had previously received the antityphoid vaccine distributed by the state board of health. There were 23 cases in the outbreak, 5 in vaccinated persons (three in one family), and 19 in unvaccinated people. Considering the outbreak by families, we find that there were 76 nonvaccinated families, 17 of which had typhoid fever in at least one person, and 7 vaccinated families, two of which had typhoid fever.

In a recent outbreak due to the drinking of water from a polluted well, out of twelve cases there were two in vaccinated persons. One had received the state board of health vaccine and the other had been given the vaccine of Manufacturer B.

Under the heavy exposure to typhoid fever which occurs in the civil population in various parts of the United States such occurrences as the above will take place from time to time and give rise to a distrust of typhoid vaccination unless more exact information is furnished regarding typhoid immunization in the civil population.

COMPARISON OF THE EFFICIENCY OF THE VARIOUS VACCINES

From the table it would appear that the Gay-Claypole vaccine has greater efficiency, measured by the lower percentage of true failures, than the unsensitized vaccines considered as a group. This is not shown beyond question by the facts at hand because the two sets of figures are not exactly comparable. The methods of distributing the vaccines were different, with the result that more of the Gay-Claypole vaccine than of the unsensitized varieties was used in large groups of people, as in lumber camps and institutions. Another possible source of error is the fact that a large part of the Gay-Claypole vaccine was distributed as late as the summer of 1914 and a certain number of failures are still to be expected in the vaccinated persons reported in the questionnaire. A number of additional failures would also be expected in the persons reported as vaccinated with the other makes. It is, therefore, out of the question to draw any definite conclusions regarding the superiority of one vaccine over another, on the basis of the figures available, but the statistics seem to indicate that there is no great difference between the principal types, and that the reported failures of the vaccine manufactured and distributed by the state board of health were not due to inferiority of the vaccine issued, but rather to limitations common to the several types of vaccine administered to the American public.

REACTIONS AFTER ANTITYPHOID VACCINATION

The severity of the reaction, as valued by the physicians who returned the questionnaire, is shown in Table 4. Observations regarding 2,695 vaccinations of university students and inmates of institutions with the Gay-Claypole vaccine by two physicians were excluded so that the figures might fairly represent a composite of the opinions of a large number of physicians. The fourth column in the table shows how many persons had reactions sufficiently severe, in the opinion of their physicians, to warrant their staying in bed for at least half a day. The classification of reactions as slight, moderate, and severe was intentionally left entirely to the physicians making the reports in order to find out their opinions regarding the amount of annoyance caused by the combined local and general reactions rather than to obtain exact observations on the phenomena. The question of severity of reaction is important when it comes to persuading the public to submit to vaccination in large enough numbers to make an appreciable reduction in the morbidity from typhoid fever.

It will be seen that the estimates of the severity of the reactions are almost alike for the sensitized and unsensitized vaccines. It was expected that the sensitized vaccines would cause distinctly less discomfort. Similar results have been obtained by E. S. Kilgore, in a series of observations, as yet unpublished and referred to here through his courtesy. Observations were made by Kilgore on the reactions of eighty-five subjects, vaccinated in four nearly equal groups. Two groups received the United States Army vaccine, obtained through the courtesy of Captain Henry J. Nichols, and two groups received the Gay-Claypole vaccine manufactured by the hygienic laboratory of the state board of health.

Of each pair of groups receiving the same kind of vaccine, one received the vaccine at two-day intervals, and the other at ten-day intervals. The reactions were measured mathematically on the basis of temperatures and measurements of the size of the local reddened area and the slight increase in circumference of the inoculated arm. The vaccines were used in the dosages recommended by their manufacturers and these were not exactly alike. Within the limits of Kilgore's tests and our inquiry no definite diminution of reaction due to sensitization was determined, unless this is indicated by the smaller number of persons (Table 4) who were sick enough to go to bed after receiving the sensitized vaccine.

TABLE 4.—REPORTS OF REACTIONS IN 5,429 VACCINATIONS

Kind of Vaccine	Not Specified	Absent		Slight		Severe		Necessitating Stay in Bed	
		No.	%	No.	%	No.	%	No.	%
Gay-Claypole	97	578	28.5	1,159	57.1	294	14.4	49	2.4
A	180	591	32.7	979	54.2	235	13.0	92	5.1
B unsensitized	0	61	38.1	98	61.3	1	0.6	4	2.5
B sensitized	0	16	59.3	11	40.7	0	0	0	0
United States Army	1	43	50.0	38	44.2	5	5.8	4	4.7
C	0	87	48.1	93	51.3	1	0.6	2	1.1
D	0	1	6.7	9	60.0	5	33.3	3	20.0
E	0	0	0	3	75.0	1	25.0	1	25.0
F	0	23	43.4	27	50.9	3	5.7	3	5.7
Two private laboratories	0	122	59.5	82	40.0	1	0.5	1	0.5
Maker not specified	190	98	24.9	270	68.5	26	6.6	3	0.7
Total sensitized	97	594	28.9	1,170	56.9	294	14.2	49	2.4
Total unsensitized	181	928	37.0	1,329	53.0	252	10.0	110	4.4
Total unspecified	190	98	24.9	270	68.5	26	6.6	3	0.7
Total	468	1,620	32.7	2,769	55.8	572	11.5	162	3.3

CONCLUSIONS

1. Antityphoid vaccination is meeting a severe test in the civil population because the vaccine is most used where the exposure is greatest, and because only a small proportion of the people are vaccinated.

2. In California an inquiry has shown that the true failures were 5.0 per thousand vaccinations reported, and the deaths from typhoid fever were 0.49 per thousand. The total number of vaccinations reported was 8,124.

3. The percentage of failures indicated a slight advantage for the Gay-Claypole sensitized vaccine over the unsensitized vaccines, but the superiority was not conclusively demonstrated as the different sets of statistics were not exactly comparable.

4. There is little difference between the vaccines, sensitized and unsensitized, in common use in California with regard to the severity of reactions after inoculation.

5. If widespread and severe exposures are prevented by better supervision over public water, milk, and food supplies, vaccination can be depended on to diminish greatly the residual typhoid fever, especially if a large enough proportion of the people are vaccinated to reduce contact infection to a minimum.

ABSTRACT OF DISCUSSION

Dr. George E. Ebright, San Francisco: The interesting part of Dr. Sawyer's paper consists in his comparison between the use of vaccine in the army and in the civil population. There are three things which we, as clinicians, always naturally bear in mind and consider in giving typhoid vaccine to a patient. First, there is the degree of immunity that will be accomplished. As Dr. Sawyer says, we are not able at present to establish a conclusion from that comparison. Second, is the duration of the time required for the patient to receive a complete vaccination. The sensitized serum has the advantage of requiring a shorter period of time for administration. Then there is the matter of suffering and reaction which the patient will have to undergo. There again we are not able to come to a conclusion. But there are a number of things that arise for comparison between the army and the civil population. There are in civil life a number of things that do not obtain in the army. The civil practitioner has to deal not with the healthy soldier, subject to repeated physical examination in addition to the examination which he undergoes before he joins the army, but persons as well who may be suffering from any of the chronic diseases, such as tuberculosis. From my own experience I am very loth to give antityphoid vaccine to a person with the least degree of active tuberculosis. I have seen three cases in which the reaction was unusually severe in comparison with nontuberculous people. It would be premature, however, to come to a conclusion at the present time regarding the relation of a vaccine reaction against typhoid and tuberculosis, but inasmuch as the question is still undecided, it is the part of wisdom to be conservative. Finally, it is desirable to be mindful in making comparisons between army vaccine and sensitized vaccine of the possibility of army encampments being under better general sanitary conditions and being less subject to the danger of infection than is the case in civil practice.

Dr. H. J. Nichols, San Francisco: Dr. Sawyer's paper gives just the sort of results that I personally expected to see in the army in the course of a year or so after vaccination was introduced. I hardly expected that our results would be as good as they have been, but they have continued to be remarkable. The most recent statistics are just as good as they have been for the last three or four years. In other words, up to 1910, since 1904, we had been having between 200 and 300 cases of typhoid a year. During the Spanish War our rate was very high, but it dropped to a minimum of the number stated. Then came the results of vaccination. It is often said that sanitation has had a great deal to do with our results. I beg to differ from that opinion. I am somewhat familiar with conditions in the army, and I can say emphatically that sanitation has made no unusual advance since 1910 in the army; there have been no radical changes. Since 1910 and 1911, when vaccination became compulsory, our rates have dropped remarkably. Last year (1914) we had seven cases of typhoid fever. Four of these were in recruits who were taken into the army during the incubation period of typhoid. Three had been vaccinated, one five years before the attack, one had two doses two years previously, and one, three doses two years previously; but the majority of our cases are now in recruits who are taken in during the period of incubation. In a week or two after they enlist some men develop typhoid fever. Sometimes they have had one inoculation.

The fact is that our results are just as good today as they were when typhoid vaccination was first impressed on the public as being of great value. We have had no such bad luck as Dr. Sawyer reports in California. I do not pretend to say what his results are due to, but I do feel like emphasizing the fact that our vaccine is made with great care. It is a very simple matter, but it is made according to definte principles and they are rigidly adhered to. It is not an experiment with us any more. It is too valuable to experiment with, and we do not allow any changes to be made.

Another thing, we do not allow any vaccine to be used after four months. A great many of the commercial houses are allowed by law to put a year's limit on the vaccine. I do not know what effect this may have had in Dr. Sawyer's results. Again some persons receive only one dose or two. Our men take three doses, or they hear from us. All these factors are to be considered. Of course we are all in the same boat and the same principles must hold inside or outside of the service. I do not feel, however, that the explanations which are given for our success, such as lack of exposure, etc., are at all conclusive. Our men certainly are subject to the same infection that anyone is. Our soldiers go down town and go into restaurants, and everywhere they are subject to the same contamination as any other citizen. I cannot help believing myself, personally, that our vaccine is somewhat superior to the vaccines in general use. At any rate, the fact is that we have not had any such setback as is mentioned by Dr. Sawyer.

Dr. E. S. Kilgore, San Francisco: It is unfortunate that it was not possible to obtain reliable returns from another 8,000 unvaccinated subjects living in the same communities and under the same conditions as those included in this analysis. They would be the only group with which it would be fair to compare these results, and for reasons given in the paper they would undoubtedly have shown a much greater morbidity than the population at large. As it stands, the sensational fact which will stick in the mind of the ordinary reader is that there is actually more typhoid fever among the civil population who have received antityphoid vaccination than among those who have not. This impression will be false and dangerous unless the reasons for it given in the paper are duly appreciated. A factor not mentioned by Dr. Sawyer which may account for some of the morbidity among vaccinated subjects is the feeling of security which they have and the consequent relaxation of hygienic measures they would otherwise employ. The feeling has been widespread that antityphoid inoculation is a sure preventive, and the individual who considers himself already safe will not take troublesome precautionary measures. Therefore, an important practical lesson to be taken from this paper is that whenever we immunize people against typhoid fever (or any other infection) particular pains should be taken to make them understand that the protection conferred is not absolute and does not remove the necessity for ordinary hygienic precautions. In view of the presumable necessity of vaccinating every two or three years in order to maintain protection against typhoid, the question of relative severity of reactions following subsequent vaccinations has some importance. Some have been restrained from revaccination on account of the prevalent idea that later vaccinations produce greater discomfort than initial ones. Our experience at the University of California Hospital is that this is not true about as often as it is true, and that the average reactions from first and from later inoculations is practically the same.

Dr. L. B. Wilson, Rochester, Minn.: At the meeting of the Colorado State Medical Society last September, Jolley reported the results obtained by the use of typhoid vaccine in the National Guard while encamped during a strike in immediate proximity to a village in which a large number of cases of typhoid were occurring among private citizens. I do not remember the exact figures, but my impression is that the results were excellent, though there was abundant opportunity for the vaccinated men to become infected.

Dr. W. A. Sawyer, Berkeley, Calif.: I believe with Dr. Nichols that antityphoid vaccination was a very important factor, perhaps the most important single factor, in the astonishing success in the reduction of typhoid fever in the army. If it is claimed that the vaccine used in the army is superior to the vaccines manufactured by commercial houses which follow in their way the methods of the army laboratories, I wish it could be arranged that a large amount of the army vaccine, say enough for 10,000 people, could be distributed for use in the civil population of California. Then we should soon know whether the vaccine of the army is more efficient than the material now in use. If it is, the fact should be ascertained as soon as possible, so that the public will receive the most efficient antityphoid vaccine which can be manufactured.

THE CHOICE AND TECHNIC OF THE ANESTHETIC

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It is the purpose of this paper to analyze the many existing methods of anesthesia with the object of determining if possible in a judicial way what anesthetics should be selected and what technic should be employed in a general surgical clinic. In making this analysis and in arriving at conclusions, we have been controlled by certain requirements: first, the safety of the patient; second, the comfort of the patient; third, the efficiency of the anesthetic agent; fourth, control, avoiding anesthetics which cannot be withdrawn with the first appearance of danger; fifth, the simplicity and general adaptability of the method; sixth, after-effects on blood tissues and viscera; seventh, complications, vomiting, etc., and eighth, effects on immunity against pus organisms, pneumococci, etc.

This study is based on the special interest devoted to this subject in my own clinic by myself and assistants, Drs. Isabella C. Herb, Hamburger and Ewing, Evarts Graham, B. F. Davis, and F. B. McCarty, on pieces of laboratory research which we have carried on, on observations made in the clinics of others both in this country and abroad, and from a study of the literature. The last ten years have been very active ones in the field of anesthesia. New and better means of local anesthesia have been introduced. The use of nitrous oxid has been gradually extended, especially in this country. Complicated apparatus, mixtures and sequences have been widely employed. The use of scopolamin and morphin and various substitutes for morphin, pantopon, narcophin, etc., have been given an extended trial. The intralaryngeal method has been developed by Meltzer and Auer. Spinal anesthesia, nerve blocking, and intravenous and rectal anesthesia have enthusiastic supporters, and have been employed in large series of cases. We have during this period seen in this country the gradual development of the trained anesthetist as a member of the surgical team. So much work has been done that it would seem that we have at hand enough evidence to determine what are the best and safest anesthetics, and in what particular fields each should be employed. Such an analysis would necessarily cover a very wide field, and in this brief paper it will be possible to present simply the essential facts of this study of each of the agents and the methods.

I began this study with the intention of securing for my own clinic methods of anesthesia which would cover fully the entire surgical field, which would be the safest, most efficient, the most satisfactory to both patient and surgeon, the simplest and least complicated. I desired also to find anesthetics which could be adopted and employed by medical men generally, as my clinic is a teaching clinic for medical students, and part of their instruction is the giving of anesthetics. From this standpoint I have analyzed the following:

1. Chloroform.
2. Ether.
3. Nitrous oxid gas.
4. Scopolamin and morphin.
5. Spinal anesthesia.
6. Blocking.
7. Infiltration.
8. Intravenous, general and local.
9. Intrarectal.
10. Intratracheal.
11. Intrapharyngeal.
12. Mixtures.
13. Sequences.
14. Anociassociation.

In each instance we have analyzed these agents and methods from the standpoint of:

1. Safety.
2. Comfort.
3. Efficiency.
4. Control.
5. Simplicity and general adaptability.
6. After-effects on blood and tissues and viscera.
7. Complications, vomiting, etc. Paresis of bladder and bowels.
8. Effect on immunity to pus organisms, pneumococcus, etc.

As a result of this study I submit the following brief summary:

CHLOROFORM BY INHALATION, OPEN DROP METHOD

1. Safety: The most dangerous of all inhalation anesthetics. Deaths from one in 1,000 to one in 3,000 on the operating table.

2. Comfort: A most agreeable anesthetic to the patient.

3. Efficiency: The most efficient anesthetic. Anesthesia and relaxation profound and complete.

4. Control: The anesthetic can at once be stopped on the appearance of danger signals, but the chloroform already in the system cannot be rapidly eliminated, and the effects persist for a considerable period. The margin between the required anesthetic dose and the toxic dose is too narrow for safety.

5. Simplicity and general adaptability: All that could be desired.

6. After-effects on blood tissues and viscera: Reduces hemoglobin. Produces often what is now generally recognized as late chloroform poisoning with fatty degeneration of liver, kidneys and muscle tissue which is usually fatal.

7. Complications: Vomiting in about one third of the cases. Lung complications and nephritis in a small percentage.

8. Effects on immunity: Reduces resistance against pus organisms, pneumococcus, etc.

Conclusion.—Because of its efficiency, comfort and simplicity it has probably been employed more generally the world over than any other anesthetic, possibly more than all other anesthetics combined. And yet the time has come when chloroform in spite of its many advantages should be absolutely and finally discarded because of the huge mortality attending its use both on the operating table and the late chloroform deaths, and because we have for all classes of surgical cases efficient and much safer agents. It is possible that in military surgery chloroform may still find a legitimate place.

ETHER BY INHALATION, OPEN DROP METHOD

1. Safety: The safest anesthetic agent known for prolonged anesthesia. Deaths from one in 5,000 to one in 10,000.

2. Comfort: Not an agreeable anesthetic to take, especially by the closed methods; much more agreeable in expert hands by the open drop methods.

3. Efficiency: Very efficient; complete anesthesia and relaxation can be obtained.

4. Control: The anesthetic can be stopped on danger signals, and the agent fairly rapidly eliminated if necessary under artificial respiration. The margin of safety between the anesthetic dose and the toxic dose is wide.

5. Simplicity and general adaptability by the open drop method is all that could be desired.

6. Reduces hemoglobin, slightly increases coagulability of the blood, and produces few if any cases of injury to liver, kidneys and muscle tissues such as occur from chloroform.

7. Vomiting in from 30 to 40 per cent. of cases. Lung complications and nephritis in a small percentage of cases.

8. Reduces slightly resistance against pus organisms and pneumococci, etc.

Conclusions.—Ether by the open drop method is the safest general anesthetic known for producing prolonged anesthesia. It should be today the standard anesthetic in the surgical clinic. The discomfort of ether anesthesia when properly given by the open drop method by an expert can usually be practically eliminated. In the few cases in which the repugnance to ether is great, the sequence of gas-ether can be employed.

The closed method of giving ether is not so satisfactory or so safe as the open drop method. Complicated apparatus to control the percentage of ether and to warm ether possess no advantages over the simple drop method, and should be discarded. The giving of ether by the drop method is an art which must be acquired under the instruction of an expert.

NITROUS OXID GAS

1. Safety: Gas for short anesthesias, such as pulling teeth, opening abscesses, etc., is the safest anesthetic known. In prolonged anesthesias, a half hour or more, gas is now known to be more dangerous than ether. I refer now to the use of gas and ether in the hands of experts. In nonexpert hands, gas in prolonged anesthesias is much more dangerous than ether.

2. Comfort: Gas is the most agreeable inhalation anesthesia.

3. Gas is not an efficient anesthetic, such as chloroform or ether. Complete anesthesia and complete relaxation for prolonged periods are difficult to maintain, and are not possible in a considerable percentage of cases.

4. Control: Gas can at once be stopped at danger signals, and the agent already in the system is rapidly eliminated more rapidly than any other agent.

5. Simplicity: The apparatus for giving gas is not very complicated, more so, however, than that used in giving ether and chloroform. It is not so widely adaptable as ether. The apparatus is heavy and cumbersome, and somewhat difficult to transport. This objection can usually be overcome.

6. After-effects on blood tissues and viscera, practically negative.

7. Vomiting occurs in but a small percentage of cases.

8. It has little or no influence on immunity.

Conclusions.—Gas should be one of the general anesthetics employed in the surgical clinic. Its place should be for short anesthesias in which unconsciousness is desired and local anesthesia is not applicable—in reducing fractures and dislocations, opening abscesses, and in some more prolonged operations in which for special reasons gas becomes safer than ether, such as operations on the urinary organs with kidney insufficiency. A surgical clinic which does not frequently employ gas anesthesia is, from the standpoint of anesthetics, a poorly conducted clinic.

SCOPOLAMIN AND MORPHIN AS AN ANESTHETIC

1. Safety: A very dangerous anesthetic, so dangerous that it has now been generally discarded by general surgeons, and is retained only by a few enthusiastic obstetricians, the Freiburg school, and has been exploited as the "twilight sleep." The exploitation has been not only in medical journals but also in the lay press. A very thorough research on scopolamin and morphin has recently been completed by the obstetric staff of the Michael Reese Hospital in Chicago and reported by Baer.[1] This investigation shows that scopolamin and morphin should be rejected absolutely and finally as too dangerous, not efficient and as complicating the process and as threatening the asepsis, in short, the same conclusion that was arrived at by general surgeons some time ago. After scopolamin and morphin had caused a good many deaths, scopolamin and pantopon was substituted, and for a time it was claimed that this combination eliminated the risks; very soon, however, fatalities began to be rapidly reported. Then scopolamin and narcophin were suggested as a safe combination. This has not been employed as yet in a large enough series to warrant final conclusions, but deaths are already being reported, and there is no strong reason to hope that this combination is safer than its predecessors.

2. Comfort: No discomfort beyond the giving of the hypodermic injection.

3. Efficiency: Not efficient. It must be followed by a general anesthetic in a large proportion of cases.

4. Control: After once injected, it is beyond the control of the surgeon, and if a dose has been given which is toxic to that particular patient, little can be done to eliminate it.

5. It is simple and could be generally adopted.

6. After-effects on blood tissues and viscera are slight.

7. Complications: Delirium sometimes of serious character is not uncommon. Patients are frequently so dopey and out of their heads that they cannot cooperate with the surgeon or obstetrician.

8. Reduces immunity to pus microbe organisms.

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[1] Baer, J. L.: Scopolamin-Morphin Treatment in Labor: A Critical Analysis of Sixty Cases, The Journal A. M. A., May 22, 1915, p. 1723. Baer says that the excessive thirst, headaches which are so distressing, the difficult control of patients, the risks of infection from soiling; the blurred vision, the ghastly deliriums constitute so severe an arraignment that "we feel compelled to condemn it."

SCOPOLAMIN AND MORPHIN PRELIMINARY TO ANESTHESIA

As a general anesthetic, scopolamin and morphin are to be absolutely and finally rejected both from general and obstetric practice. After it was generally agreed that scopolamin and morphin were too dangerous for use as an anesthetic, an extended trial of routine small doses of scopolamin and morphin preceding the general anesthetic were made, especially in Germany. The sequence has been responsible for many deaths. The evidence from the literature shows beyond question that even in small doses ¼ grain of morphin and 1/150 grain of scopolamin before chloroform, ether or gas adds distinctly to the risks of the patient. It complicates the giving of the general anesthetic. It masks danger signals. It adds to the percentage of vomiting and inability to void urine. It carries with it no advantage and many disadvantages and should be rejected. It is not a good thing, it is not a kindness to a patient to bring him to the anesthetizing room dopey and flighty. For some time after we had finally rejected scopolamin and morphin before a general anesthetic, we continued to employ it before using local anesthesia. We have now discontinued it even before local anesthesia, and find our results much more satisfactory and the local anesthesia quite as complete. In using local anesthesia, one must have the cooperation of the patient, and this one can have better with the patient in normal condition than when he is dopey. We have been pleased to find also that the occasional vomiting which occurred after our local anesthesias has practically ceased since discontinuing scopolamin and morphin, and that in our hernia operations the inability to void and the necessity to use a catheter does not occur. Preceding either the general or the local anesthesia, morphin and scopolamin should be rejected.

It is, of course, frequently necessary to use morphin on account of pain in surgical cases which later require operation under anesthetics, and where the indications are clear, morphin should not be withheld because the patient is to be given an anesthetic. The anesthetist should be informed of the fact that the patient has had morphin.

SPINAL ANESTHESIA

1. Safety: Very dangerous; more so than chloroform. Nine deaths occurred in the first 1,000 cases, and although it is difficult to give absolute statistics, there is probably more than one death in 500 cases.

2. Comfort: Not a comfortable thing, especially to an intelligent man who realizes what is being done. Few medical men with their knowledge of anatomy would choose spinal anesthesia in their own case.

3. Efficiency: The least efficient of the anesthetics except scopolamin and morphin. Necessary to supplement it with other means in from 5 to 10 per cent. of cases.

4. Control: When once injected, the agent is beyond control, and if the dose is a toxic one, the surgeon is helpless.

5. Simplicity: The method is not simple; it requires special technic and could not be generally adopted.

6. After-effects on blood tissue and viscera: These are largely expanded on the cord, and appear as cord injuries—the so-called aseptic meningitis.

7. Complications as above, and especially persistent and severe headaches lasting for days and weeks.

8. It has no effect on immunity.

That anesthesia can be produced by injecting cocain and its substitutes into the cerebrospinal fluid of the cord is an interesting fact. The method, however, has no place in surgical practice. It is too dangerous to warrant its employment, and for every surgical condition requiring an anesthetic, we have safer and more efficient methods at our disposal.

BLOCKING

By blocking I mean the attempt to anesthetize the field of operation by infiltrating the nerve supply of the part proximal to the site of operation, as blocking the gasserian ganglion, the brachial plexus, the great sciatic and anterior crural, the internal pudic, etc.

1. Safety: The method with good technic is fairly safe, except for such accidents as serious lesions from attempting to block the gasserian ganglion with resulting intracranial injury, injury to the vessels in blocking the brachial plexus, and more or less persistent paresis or paralysis of the nerve attacked from the direct trauma.

2. It is not a comfortable method. I have seen patients tortured in the attempt to block the gasserian ganglion, the brachial plexus and the internal pudic. The fact that the blocking of the nerve is often itself a surgical procedure is an objection to the method.

3. Efficiency: It is not always successful in producing anesthesia. Usually from fifteen to twenty minutes are required to produce full anesthesia, and in a considerable percentage of cases it is necessary to supplement it with other forms of either general or local anesthesia.

4. When once injected, the agent is beyond control; but inasmuch as the dose employed is or should be never toxic, this is not a serious objection.

5. Simplicity: The method is not simple; it requires often special training and technic, as in gasserian ganglion, brachial plexus, etc. It could not be generally adopted.

6. After-effects on blood tissues and viscera, nil.

7. Complications, vomiting, etc.: The method is free from them.

8. Effects on immunity, nil.

Blocking has but a limited field. Blocking of the gasserian ganglion, brachial plexus, etc., should be rejected. These are in themselves important surgical procedures, and cannot compete at all with the simpler and safer methods which we have at our disposal. In dental surgery the blocking of the inferior dental and branches of the superior dental nerves has a very useful field. As a rule, nerve blocking should be limited to the blocking of nerves which appear in a dissection made under local infiltration anesthesia, as blocking the ileo-inguinal nerve in a hernia operation done under local anesthesia.

LOCAL INFILTRATION ANESTHESIA

We have in infiltration anesthesia since the introduction of novocain and epinephrin a most important addition to our anesthetic agents.

1. Safety: Very safe when proper agents are employed and the technic is aseptic. Novocain in diluted doses of from 0.25 to 0.5 per cent. in normal salt with the addition of a proper amount of epinephrin seems to be very safe. From 6 to 8 ounces or even

more of this solution can be safely employed. In using small amounts of the solution, say, 1 or 2 ounces, 1 drop of 1:1,000 epinephrin should be added to each 200 drops of the 0.5 per cent. novocain in normal salt solution; in using larger amounts, from 6 to 8 ounces, not more than 20 drops of epinephrin should be used. I can find no report of a fatality from 0.25 or 0.5 per cent. of novocain. The addition of the epinephrin is most important. It produces a local anemia which prevents rapid absorption, and therefore makes the effect both safer and more prolonged. The epinephrin also reduces the bleeding to surprisingly small proportions.

A very definite warning should be given in regard to the use of epinephrin in too great concentration. Epinephrin in what is apparently a very weak solution is capable of producing necrosis of the tissues. I have seen this occur with the use of the tablets that are so frequently employed containing both novocain and epinephrin. It is not safe to use the tablets as ordinarily put up in any extensive operation, and these tablets should be very generally discarded and a definite warning sounded against them. I have seen no necrosis when the epinephrin has been 1:100,000, that is 1 drop to 100 drops of the novocain solution. I believe on the whole, however, that a safer rule would be 1:200,000, that would be 1 drop to each 200 drops of the novocain solution. This would be 10 drops in 4 ounces or 20 drops in 8 ounces, which might be regarded as the maximum amount to employ.

2. Comfort: If the technic is good, the anesthesia carries not more discomfort than the use of a hypodermic injection of morphin. In all cases one should inject first with a fine hypodermic needle 20 minims of the solution before using the larger needle and syringe. I tell a patient on whom I am doing an extensive lip carcinoma operation that I will promise him that he will have no more discomfort than from having a tooth filled.

3. Efficiency: With the large amounts of solution which can now be safely used, we can absolutely anesthetize the tissue infiltrated, and the anesthesia comes on at once and persists for from thirty to forty-five minutes.

4. Control: The agent after once being injected is no longer under complete control. Some control is retained, as operating on an extremity a rubber bandage is placed above the injection and free incisions would enable one to prevent rapid absorption and remove part of the fluid. I have, however, never seen any toxic symptoms or any necessity to resort to such methods.

5. Simplicity: The method is very simple and can be generally adopted.

6. After-effects on blood tissue and viscera, nil.

7. Complications, vomiting, etc.: Since we discontinued the scopolamin and morphin before our local operations, vomiting has practically disappeared. I have to report one incident which occurred in my series of cases. A week after operation for a benign breast tumor, a young girl had a thrombus of the axillary vein on the side opposite to operation. This cleared up in a few days, was painless and may or may not have been due to the local anesthesia.

8. Immunity not influenced.

Conclusions.—I believe that in local anesthesia with novocain and epinephrin we have a very safe and satisfactory method which should be employed in a large group of cases. Wilms is using it in a majority of his operations in the Heidelberg clinic. I am not prepared to go that far. I do not believe that the range of local anesthesia should be stretched too far. I am using it in about 30 per cent. of my cases.

INTRAVENOUS ANESTHESIA WITH ETHER

1. Safety: Both clinical and laboratory work shows that it is a dangerous method. Clairmont and Denk, after careful experiments on dogs, have concluded that it is too dangerous to employ in clinical work. Kuttner has two cases of lung embolism in twenty-three cases.

2. It is an agreeable anesthetic, as it does away with the disagreeable odor and irritation of inhalation of ether.

3. It is efficient, but the border line between anesthesia and a toxic dose is too narrow.

4. When once injected into the circulation, it is beyond immediate control.

5. The apparatus and technic are complicated and require special watchfulness. It could not be generally adopted.

6. After-effects are much the same as in the case of ether inhalation.

7. Complications are the same as with ether inhalation.

8. Effect on immunity is the same as with ether inhalation.

Conclusions.—Too dangerous, too complicated, no special advantages, should be rejected.

LOCAL INTRAVENOUS ANESTHESIA WITH COCAIN AND SUBSTITUTE FOR COCAIN

This was introduced by Bier and is an interesting piece of experimental work. It is a complicated method, however, requiring usually the exposure of a vein, and the distress of two tight rubber bandages above and below. It has no special advantages and should not be adopted as a practical method.

INTRARECTAL ANESTHESIA

This is an old method introduced as early as 1847 and revived from time to time.

1. Safety: It is not a safe anesthetic.

2. Comfort: It is not a comfortable method of taking ether.

3. Efficiency: It is not very efficient.

4. Control: Much the same as with intravenous anesthesia.

5. Simplicity: The method is complicated and cannot be generally adopted.

6. After-effects on blood and tissue same as inhalation anesthesia.

7. Complications: Distention of bowels, very severe local irritation of colon with colicky pains and bloody diarrhea often fatal.

8. Effect on immunity same as ether inhalation.

Conclusion.—Rectal anesthesia should be rejected.

INTRATRACHEAL ANESTHESIA

This interesting method, introduced by Meltzer and Auer, has not as yet been used in a very large series of cases.

1. Safety: Robinson collected 1,400 cases with seven deaths, one from lung rupture and one from emphysema.

2. Comfort: The same as drop ether which precedes the intubation.

3. Efficiency: It is an efficient method.

4. Control: The same as with drop ether.

5. Simplicity: It requires a complicated apparatus. It requires first anesthesia by drop ether and then a change to intubation. It could not be generally adopted.

6. After-effects same as drop ether.

7. Complications same as drop ether.

8. Effect on immunity same as drop ether.

Conclusions.—The method is dangerous. It is complicated and it possesses advantages in very few cases. When it was introduced it was welcomed as a simple method which had all the advantages of the complicated differential pressure methods which had been experimented with in thoracic surgery. As a matter of fact, both the complicated differential pressure and the intratracheal methods have practically been largely eliminated as a result of further investigations in thoracic surgery, which have demonstrated the fact that most of the operable cases in thoracic surgery can be done either under local anesthesia or drop ether or gas and oxygen; that the necessity of preventing collapse of the lung when but one pleural cavity is opened was theoretical and not real, and lastly, by the fact that the extensive work in which both pleural cavities are involved and such extensive work as attacking the thoracic part of the esophagus can not as yet be accepted as warrantable surgical procedures; furthermore, the introduction of the simpler method of intrapharyngeal anesthesia has eliminated the intratracheal method from the field of head surgery, in which for a time it seemed to have a place. On the whole, therefore, intratracheal anesthesia has little place in practical surgery.

INTRAPHARYNGEAL ANESTHESIA

This is an old method introduced years ago and reintroduced from time to time with changes in apparatus. Souchon developed a simple apparatus. A catheter was introduced through the nose or mouth into the pharynx, and with a hand bulb ether vapor was introduced. Potts, one of my assistants, invented a simple foot bellows to drive the ether vapor. Dr. Isabella Herb has made an apparatus in which the ether vapor is forced by a small air pump driven by an electric motor, taking its power from the ordinary electric light plug. The special advantage is that in mouth and jaw work after the patient has been anesthetized by drop ether, the mask can be removed, the catheter introduced into the pharynx through the nose or mouth and anesthesia continued without interfering with the operative field.

1. Safety: It is about as safe as drop ether.

2. Comfort: The same as drop ether, which it succeeds.

3. Efficiency: Not quite as efficient as drop ether but nearly so.

4. Control: Same as with drop ether.

5. Simplicity: It can be operated with a hand bellows, but better by an electric pump, if this is kept up in perfect working shape. It can be fairly generally adopted for use in mouth and jaw work.

6, 7 and 8. After-effects, complications and effect on immunity: Same as with drop ether.

MIXTURES AND SEQUENCES

There has been somewhat of a tendency, especially on the part of some professional anesthetists, to introduce in their work special mixtures and sequences, and complicated apparatus. I believe that, on the whole, anesthetic mixtures like the old shotgun prescriptions of the past should be avoided, and the patient's life should not be jeopardized by the administration of two or more powerful poisonous agents at the same time, one of which might intensify the action of the other or mask the ordinary danger signals. The sequences which I think should be accepted not as a routine but for special cases are the sequence of gas and ether, and local infiltrations supplemented with short gas anesthesia during some painful manipulation. The complicated apparatus to measure the percentage of ether and to warm ether possesses no advantages and should be relegated to the scrap heap. My assistants, B. F. Davis and F. B. McCarthy, who have gone into this matter fully and will shortly report on their work, summarize their results as follows:

WARMED ETHER IN ANESTHESIA

The amount of heat required to warm ordinary ether vapor as used in anesthesia by the open or closed methods by intrapharyngeal or intratracheal insufflation to body temperature is so small as to be a negligible factor in lowering body temperature and inducing shock in anesthetized patients. During an hour's anesthesia with the coldest ether vapor, one is likely to obtain, say, 8.5 C.; the heat used in warming the anesthetic is equal to that lost in climbing up 75 feet of stairs, and this spread over the entire hour. No more mucus and saliva is secreted when anesthesia is induced and maintained with cold than with warm ether. So-called cold ether vapor does not appear to be more irritating to mucous membranes than warmed ether. The quantity of ether required to produce and maintain anesthesia does not appear to be materially influenced by warming ether. The warming of ether vapor, however administered, is accomplished in the mouth, pharynx and trachea, and the anesthetic reaches the alveoli at body temperature.

It has been shown that with percentage-measuring machines there is danger of continuing too long the high percentage vapor, that is, the anesthetist watches the dial of his machine and not the patient. A jar which will allow air to be passed over the ether, through the ether, carried over the ether without coming into contact with it at all, or any combination of the foregoing routes is easily constructed, cheap and satisfactory. The rate of administration of the anesthetic may be governed by the same guides as in the drop method.

There appears to be no reason for the adoption of any of the expensive and more or less complicated ether-warming or percentage measuring machines which are offered for sale.

ANOCIASSOCIATION

We are all familiar with the interesting work which Crile has been doing under his so-called anociassociation method. When I heard Crile present the subject I was greatly interested. When I saw his brilliant work in his operating room I was delighted with his technic and his admirable surgical methods in general. No one can find fault with Crile's general statement that "the prevention of shock in operations under inhalation anesthesia is, as it seems to me, most effectively accomplished by the conservation of the energy of the patient, by the prevention of the loss of heat, loss of blood, the exclusion of psychic influences, a minimum trauma of sensitive tissue, by a featheredge dissection," etc. But when he adds that he can wholly prevent shock by sequestering the brain from the field of operation by blocking the nerves with novocain, we cannot accept either his assertion or the experimental work on which this is based.

To begin with, none of us know what shock is. Physiologists who have devoted much time and study to the subject are not agreed among themselves as to just what shock is, and most of them admit that they do not know. Many of them have repeated Crile's experimental work, and practically none of them accept his theory or his results.

As examples I submit the following conclusion of experimenters who have investigated this subject:

> JANEWAY and EWING:[2] If trauma to the sensory nerves is a factor in production of shock in an unconscious animal, it is wholly subsidiary to other factors, and it is questionable whether it was apparent in our experiments even when these other factors had rendered the nerve centers more vulnerable by toxic influences, as ether, or by a fall in blood pressure.
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> PORTER and QUINBY:[3] The symptoms of shock are a clinical entity about which there can be little dispute. Shock, on the contrary, is a pathological state, the data of which are at present hypothetical. The hypothesis which constitutes the hitherto generally accepted definition of shock declares that the vasomotor cells are depressed, exhausted and inhibited by excessive stimulation of afferent nerves; the fall in blood pressure and the accompanying symptoms are the result of this depression. The experiments cited in this paper demonstrate that the vasomotor cells are not thus depressed or inhibited, and experiments published in the last number of this journal show that excessive stimulation of afferent nerves does not materially lessen the blood pressure. The present hypothetical basis of shock is thus removed.
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> SEELIG and LYON:[4] In conclusion, it is important again to emphasize the fact that the experimental work detailed in this paper is in no sense of the word to be taken as an explanation of the causative factor or factors of shock. Just as Porter claims to show explicitly that in shock the vasomotor center is not exhausted, and therefore implicitly that the peripheral vessels are not paralyzed, so we try to show explicitly that the peripheral vessels are contracted and implicitly that not all the vasomotor centers can be exhausted. The complexity of the vasomotor apparatus with its multiplicity of centers and the seemingly independent action of many of these centers, render it impossible to frame a satisfactory theory based on our results. This much may be said with assurance: If the work herein detailed stands the test of confirmation, then the doctrine that shock is due to vasomotor exhaustion must be revised.
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> MANN:[5] It is impossible to reduce the anesthetized animal to a state of shock by any degree of sensory stimulation, provided all hemorrhage is prevented and its abdomen is not opened.

After analyzing Crile's work and the work of competent physiologists, I have been forced to the conclusion that there is no scientific basis for Crile's statement that he can wholly prevent shock by sequestering the brain from the field of operation by blocking the nerves with novocain. Crile's excellent surgical work is done not because of anociassociation but in spite of it.

The complicated sequence of scopolamin and morphin, gas, oxygen, ether, novocain and quinin and urea hydrochlorid is a method open to many objections. The scopolamin and morphin, as I have attempted to show in this analysis, add distinctly to the risks of the patient and should be omitted. The gas-oxygen plus ether, if used alone, is an acceptable anesthetic sequence, but not so safe as a routine as drop ether and gas and oxygen used alone in properly selected cases. Novocain used alone in infiltration anesthesia is of great value and has a wide field of usefulness. Used in this sequence it has little value, certainly none in preventing shock. Quinin and urea hydrochlorid has no value in this sequence, and used alone as an anesthetic cannot compete with novocain and epinephrin. I believe, therefore, that we must reject both the theory and the practice of anociassociation.

CONCLUSIONS

The final results of my analysis of the anesthetic problem are as follows:

1. Drop ether should be today chosen as the standard general anesthetic when a prolonged anesthetic is desired with relaxation and unconsciousness.
2. Intrapharyngeal ether should be chosen in mouth and jaw cases when it is desirable to remove the anesthetist and the anesthetic apparatus out of the operative field.
3. Gas should be chosen in short anesthesias in which unconsciousness is desired, and in special cases, such as kidney insufficiency.
4. Local infiltration anesthesia should be chosen when the surgeon has the full cooperation of the patient and when the field of operation can be completely infiltrated and anesthetized by a safe amount of novocain and epinephrin.

These four simple and safe methods can be made to cover all surgical cases. This places anesthesia on a very unpretentious, simple basis, but here as in most fields of surgery, we finally learn that simplicity is near to truth.

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The Control of Communicable Diseases.—The monthly *Bulletin* of the State Department of Health of New York makes this subject the chief feature of the September issue. It points out that the loss of life from typhoid fever, diphtheria and scarlet fever remains too high. These three infections, together with measles and whooping cough, were responsible for the deaths of over 5,000 people, mostly young children, in New York State last year. This issue of the *Health News* contains an account of four outbreaks of communicable disease. Septic sore throat in Westchester County was spread by contact and secondarily to a slight extent by milk; scarlet fever in Dutchess County was spread primarily by milk and secondarily by contact; diphtheria in Rockland County, by milk, and in Westchester County, by contact. Therefore, the remedies which would guard against such outbreaks are simple—pasteurization of milk and isolation of early cases of disease. These four epidemics included nearly 1,400 cases of disease. From this experience the following lesson is emphasized: 1. Unpasteurized milk is unsafe to consume. 2. Local health departments can prevent outbreaks of this kind by requiring the pasteurization of milk before delivery to consumers. 3. In the presence of scarlet fever all cases of sore throat should be treated as septic sore throat, which is reportable to the local health department.

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[2] Janeway and Ewing: Ann. Surg., 1914, lix, 158.

[3] Porter and Quinby: Condition of Vasomotor Neurons in Shock, Am. Jour. Physiol., 1907-1908, xx, 500.

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PROJECTILE WOUNDS OF THE HEAD

EXPERIENCES DURING RECENT SERVICE IN AUSTRIA, WITH PARTICULAR REFERENCE TO WOUNDS OF THE EYES *

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The material for this paper is drawn from over 300 cases in my own wards of the Vienna General Hospital, where, after serving for four months as voluntary assistant in the Fuchs clinic, I was given charge of two wards of this service, these wards being devoted to the care of the wounded and especially of eye and head injuries. I was further able to observe and to assist in the surgery of over 800 other wounded in the associated wards of Professor Büdinger's service, among whom were a number of face and head cases. From army surgeons among these patients, I was also fortunate in gleaning much interesting matter relative to the rapidly fatal wounds seen on the firing line.

In the first month of the war comparatively few head injuries were received, because the fighting was in the open; but with intrenchment operations on a large scale, the number rose rapidly.

Because of the position of the men in the trenches, wounds of the head are probably the most frequent of all injuries, their frequency being masked in the hospital lists of wounded by the fact that fully 95 per cent. of all short-range wounds of the head are immediately fatal because of the literal ruin which the modern sharp-nosed bullet makes of the cranium and its contents.

Facial wounds are very common and may be serious if the eyes are involved, or if the mastication is impaired through damage to the jaws or their articulations. The central part of the face, however, may be traversed in all directions by undeformed bullets, with the tissue destruction practically limited to the bullet's path because of the spongy nature of the bone, and this, apparently, without regard to the velocity of the missile. Infection of the sinuses is the rule when they are perforated, but when the splinters of bone are removed and free drainage provided, healing takes place with unusual rapidity. The lower jaw frequently suffers extensive comminution because of its compact structure, and the fragments of bone and the dislodged teeth often act as infecting secondary missiles or tear away considerable portions of the lower face.

Some idea of the terrific impact of the modern spitzer bullet may be gained, when it is understood that the 10-gram German bullet has a muzzle velocity of about 2,900 second-feet, and revolves on its long axis, its boring and chief pathologic motion, about 2,500 times per second. In terms of energy, this means that at 100 yards, the bullet has a working force capable of raising a weight of over three quarters of a ton to a height of one foot, and at 300 yards a half-ton would be raised an equal distance, while at 500 yards the force drops to about 600 foot-pounds. Consequently, it becomes obvious why so few of the short-range bullet wounds of the cranium figure in the lists of the base and reserve hospitals.

Reconstruction of skulls shattered by the modern pointed bullet shows that the undeformed bullet passes completely through the skull and emerges before the collapse of the cranium occurs. Until very recently this collapse was supposed to be due to a so-called "explosive action" of the missile, but careful reconstructions show that radial and circular fissures arise from both the wound of entrance and that of exit and so interlace that finally the cranial dome becomes converted into a myriad of fragments. These fragments tumble into the general ruin and are dissipated far and wide through the transmission of the energy of the bullet to the brain substance, which spreads and storms out through every fissure. When the missile is deformed, and the modern bullet seems to have the property of flowing out of shape with uncommon ease, the effect on the head is the same as on the rest of the body, tremendous laceration and loss of tissue.

At ranges above 500 yards, the lessening in the energic activity of the bullet is rapid, so that at 1,800 yards, which is somewhat less than half the range of the German arm, only two slightly splintered wounds may be made in the skull. At such a range, if the skull and brain have merely been guttered, the patient has some chance for his life, and this seems to be especially true when a lateral shot has grooved the surface or tip of the frontal convolution, a part of the brain comparatively tolerant to physical insult.

The importance of these frontal wounds to the eye surgeon lies in the comparative frequency of the accompanying fracture of the orbital plate, a fracture which was long offered as a typical example of the "contrecoup," but which we now know to be part of the system of radial fissures produced by the splitting lateral, rotary action of the bullet on bone, or of the system of circular fissures, which are chiefly bending and bursting fissures, produced where the lines of transmitted energy or stress meet and oppose. Probably careful examination would also disclose quantitative or qualitative olfactory changes in these cases, as it is not easy to conceive of the weak cribriform plate of the ethmoid escaping uninjured. The results of such fractures of the orbital plate vary from slight to severe degrees of bleeding into the orbital fat, the upper lid and the conjunctiva, with more or less *protrusio bulbi*, to cases as grave as the following, which is offered as an addition to the causes of pulsating exophthalmos:

Case 1.—F. W. was admitted, Oct. 28, 1914, with an oblique bullet wound of the right frontal region, which had ruined the right frontal boss, had opened the skull and the frontal sinus, had guttered the right frontal convolution and had produced three sagittal fissures in the right orbital vault, fissures radiating from the entrance wound. The margins of the wound were black from necrosis, and its depths were filled with pulsating, stinking fluid, and rotting cerebrum. The symptoms were severe headache and prostration and frequent vomiting. The lids of the right eye were pushed forward and everted by a markedly protruding and pulsating globe, which squeezed the conjunctiva forward in great, red chemotic folds. The sclera was deeply injected and the cornea was dulled by a beginning lagophthalmic ulcer. The anterior chamber, strangely enough, was of normal depth. The iris was discolored a dirty yellowish green, and the pupil was dilated and quite immobile. There was no red fundus reflex and the eye was amaurotic. The diagnosis lay between a pulsating exophthalmos, due to traumatic arteriovenous aneurysm from the laceration of the retrobulbar vessels by bone splinters, and a great orbital hematoma from the same cause. The wound was enlarged, cleansed of loose brain and bone fragments, and two long, loose anteroposterior fragments of the orbital plate were removed. Before this was completed, it had become evident that no extensive hematoma and no aneurysmal varix existed here. Instead, the lacerated frontal brain, with much accompanying serum and cerebral fluid, had poured through the widely spread breaches in the orbital plate, had driven the eye forward and had transmitted the cerebral impulse to the protruded ball. The final diagnosis was "pulsating exophthalmos from cerebral hernia into the orbit, after extensive fracture of the orbital plate." The patient died shortly after of a virulent dysentery of the Flexner type.

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One of my surgeon-patients told me that at the front it was by no means uncommon to observe distinct pulsating exophthalmos as an antemortem sign among the frequent cases of side-to-side perforation of the lower temporal region.

Of course every known variety of eye injury occurring in civil life has its duplicate in battle injuries. In a number of such cases, some types of injury, however, are likely to stand out by reason of their frequency, and this has been the basis of my rough grouping of the cases which fell to my care or came under my observation.

1. The most frequent type of bullet wound as well as the most disfiguring wound of the orbital region, was that in which the antero-external wall of the orbit was cleanly shot away, the bulb always being ruptured. The exposure resulting was so nearly identical with that given by the Krönlein operation that I called these cases "Krönlein shots." In our series the right eye was injured in this way about twice as frequently as the left.

2. In many cases in which bullets struck or perforated the orbital cone, without touching the globe, the globe was shattered by indirect violence; or if this was not great enough to produce a rupture, lesser expressions of force appeared as iridodialyses, dislocations of the lens or rupture of any of the tunics of the eye, alone or in any combination. Reports of four different cases of this type follow:

Case 2.—Lieut. F. was shot from the rear while leading a charge up a hillside during the first Serbian campaign. The bullet entered at about the middle of the scapular origin of the right trapezius, continued obliquely across the right neck to the lower jaw, comminuting part of its alveolar and all of its coronoid process, perforated the superior maxilla and malar bones and emerged from the external angular process of the right frontal bone. The orbit was not entered, yet the lower lid was torn away from the inner canthus, its conjunctiva lacerated horizontally in three places, and the cornea, iris and ciliary body were ruptured horizontally at about 190 degrees. Enucleation and a plastic operation on the lid were required. This case was of further interest in that the trismus, which followed the shattering of the coronoid process, simulated tetanus and rendered feeding so difficult that the question of ultimate starvation actually arose. This was overcome by gradual, forcible opening of the mouth and by the later removal of necrotic jaw-bone through the mouth.

Case 3.—A private was shot in the right cheek while sighting his rifle. The bullet entered just below the center of the attachment of lower lid to orbit, perforated the superior maxilla, crossed the antrum, leaving several large fragments of bone in its wake, and finally emerged from the mouth through the palate, which it fissured freely in the coronal plane. The orbit was not entered. The right eyelids were edematous, the conjunctivae injected and considerable ciliary injection was present. The cornea was normal and the anterior chamber of normal depth but with a slight hyphemia. The iris was clearly marked, but was discolored to a greenish blue.

No fundus examination was possible on admission because of hemophthalmos, but this lifted in about two weeks, revealing a ragged tear squarely through the macula and curving downward and inward for about 6 mm. The retina in this situation showed the characteristic changes of a retinitis proliferans.

The vision at the time of discharge was 6/3 with the left eye and finger counting at 2 cm. with the right. In this case, as in practically all cases in which bullets open the accessory sinuses, empyema resulted, but healed in about twenty days after the fragments of bone were removed through the canine fossa, and free drainage established.

Case 4.—The patient was struck squarely over the left frontomalar suture by a spent bullet from a machine gun. The missile had so little energy left that not only could it not penetrate the hard bone, but also it dropped back out of the wound. On admission, the iris was found to be torn radially down to its root at about axis 45, the lens was luxated downward and the black sickle of the ciliary body could be seen running from axis 20 nearly to axis 50. In this situation especially there was marked iridodonesis. The lens was gray-white and swollen forward into the pupil. Repeated Roentgen examinations detected no foreign body in eye or orbit, so the diagnosis of capsular rupture by indirect violence was made. Atropin was given, but the tension rose to the point where a linear extraction was made necessary.

Case 5.—J. K., sergeant, aged 28, and a lawyer in private life, was shot in Russia, October 23, and admitted, October 29. The left lower orbital margin was shot away from left to right, producing a large coloboma of the lower lid. The ball passed through the inner canthus and the nose and emerged 1 cm. below the inner canthus of the right eye. Neither eye suffered direct violence from the missile or from bone fragments. The attachments of the internal and inferior muscles of the left eye were torn away, its sclera was ruptured in several places in the lower inner quadrant, the cornea was wrinkled and the bulb collapsed. The shallow anterior chamber held blood.

The principal changes in the right eye consisted in a considerable hemophthalmos and a 6-mm. long circular rupture of the sclera, lying midway between limbus and fornix in the upper inner quadrant. Through this rupture the vitreous had flowed, to lift up the conjunctival covering in the form of a transparent semiovoid, through which came the dark shimmer of the uvea. The iris was pulled so strongly outward and upward that less than its lower half was visible. By November 18, the right eye was partly freed of blood and could perceive light at 3 meters. Temporal projection was false, but nasal projection was accurate. The conjunctivitis of both eyes, which had resulted from the large openings into the nose, was cleared up by this time and permitted the enucleation of the left eye, with a suture of the upper lid to the margin of the great coloboma of the lower lid, for the best cosmetic result. At the same sitting, three deep mattress sutures of silk closed the scleral rupture.

One of the most interesting facts which these cases of indirect violence have shown, and a fact which is of the greatest importance in any consideration of the mechanism of the production of bullet wounds, is that the injury to the bulb is seldom, if ever, in a direct line with the line of incidence of the blow, but is usually nearly at right angles to this line. This must be accepted as the effect of the rotary, boring motion of the bullet, produced by the rifling of the barrel and which, as demonstrated here, in shots of the brain and by its action on bone and on soft organs like the liver, is by far the most pathologic motion of the bullet. That this rotation of about 2,500 times per second, at the rifle muzzle, could have gone so long unconsidered as the source of most of the lateral trauma along the bullet path, seems strange, in view of the radial splits and fissures which stream out at, or nearly at right angles to the course of every bullet, in soft viscera, as well as in bone.

3. Probably shrapnel and other shell explosions are the most common cause of unilateral blindness, and

lead most frequently to enucleation, from direct perforation of and lodgment in the bulb, with or without infection, or from the frequency with which malignant serpent ulcers follow the not uncommon corneal abrasion. Curiously enough, small shrapnel fragments seem to be less often the corneal abraders than the particles of dirt which spurt to all sides in clouds when the shell explodes on or just above the ground. The high explosives with which shells are charged may break them into two or three thousand fragments, of sizes which vary from the great, irregular masses of metal which have all the terrible lacerating effect of solid shot, to the finest, dustlike particles whose presence in structures like the eye is often demonstrable only after repeated roentgenograms.

The smaller shrapnel fragments produce all the types of perforating injuries seen in civil life, traumatic cataract, iris prolapse and hemophthalmos being perhaps most often observed. Panophthalmitis is not uncommon, as might have been anticipated from the high percentage of infection following shell and shrapnel injuries of other parts of the body. As I have reported in a previous article,[1] this percentage reached over 85 in our general series of shrapnel and other shell wounds.

Our common rule in these cases of perforating wounds produced by shell fragments was prompt enucleation where there had been material damage and when fragments of any size were lodged in the globe and were not easily accessible. Local anesthesia could not be employed here because of the unusual tenderness and the frequency of an accompanying low-grade orbital cellulitis and of unusual bulbar and conjunctival adhesions. No enucleation was deferred because of a mild orbital cellulitis, nor was any change made in the usual method of operating, yet in no case was there the least sign of meningeal extension of the orbital inflammation. When very small and dust-form fragments were the offenders, expectant measures were used if the vision was not diminishing and if the eye was not tender or had no noticeable amount of reaction. Of course, such patients were kept under close observation and, when discharged, were cautioned to report themselves at the slightest sign of intolerance to the foreign body. The results following the removal of shrapnel and other shell fragments were much more unsatisfactory than those following the removal of similar metallic fragments in civil life. This was probably due to the much greater length of time ensuing between injury and operation and to the greater frequency of infection.

4. Our cases of war psychoses, among which hysterical amaurosis is included, were all the result of a shell of some sort bursting unexpectedly in their neighborhood.

The following case is fairly typical:

Case 6.—L. R., aged 29, a sergeant-major and in private life a bookkeeper, stated that a shrapnel struck the ground in front of him and burst at the very moment of striking. For a moment he was unconscious and thereafter saw everything so clouded and so imperfectly that, in trying to obey orders, he led his men in the wrong direction and commanded them to fire in the direction of his own main body of troops. Seven days after the battle, the movements and external appearance of the eye were found to be normal. Both pupils reacted briskly and the fundi were normal. Vision was reduced to the perception of hand movements. With a +10 sphere the right eye could count fingers at 5 cm., and with a +8 sphere the left eye counted them at 3 cm. The fields of vision were shrunken to mere points. A nerve examination showed a right facial analgesia, but all other reflexes were normal. Treatment consisted of sweating and complete rest in bed for several weeks, together with the assurance of complete recovery. Later faradization and strychnin sulphate injections into the temporal regions aided in a very slow but constant improvement, which, in our belief, was retarded by the patient's unwillingness to face the prospect of a return to the front. Several of our patients who suffered from war psychoses declared that the air pressure produced by the explosion was the real causative factor in their conditions, as it had hurled them several meters high into the air, a seemingly obvious misstatement.

5. About a sixth of our eye cases were those in which the strain of hard campaigning on insufficient food, and with exposure to weather and to filth conditions, had produced the same ocular diseases or recrudescences which might be expected to follow similar strain or exposure in civil life. The most noticeable among these were recurrent cases of rheumatic iritis, keratitis eczematosa and parenchymatosa, chronic and acute conjunctivitis and serpent ulcer. One case of severe rheumatic iritis occurred in a Jewish private who had deserted and come to us after his regimental doctor had repeatedly refused him treatment on the ground that nothing was wrong with the eyes.

A rather frequent cause of corneal ulcer was from dirt thrown into the eyes in the strenuous digging of hurried intrenching or in the unexpected caving in of trench walls.

I am confident that one sequel of this war will be the extension of trachoma, which was being well limited in Austria and Germany, but which is now being freely introduced throughout both countries by the hordes of refugees from infected districts.

6. Another interesting group of cases was referred to us from all sides. These were cases in which the eye had been shattered at periods of from one to four weeks prior to admission. When the injury was not more than a week to ten days old, scleral and rarely corneal residues could be made out in the depths of the wound, but beyond that time the vigorous conjunctival growth almost invariably buried them beyond recognition, and an exploration was often necessary, when, as frequently happened, no history accompanied the patient.

In every case of this sort the residues were carefully removed as a prophylactic against later cystic or malignant growths, as well as for their possible influence on the sound eye. Without exception the conjunctiva was adherent in unusual situations, and the conjunctival sacs were so greatly shallowed that, even after free dissection of the unusual bands and adhesions, a good cosmetic result with regard to wearing artificial eyes was seldom obtained.

7. Several of the many irregular cases are worthy of record:

Case 7.—An infantry captain, who was wearing his pince nez into action, felt a sharp, stinging pain in his right eye, following the explosion of a shrapnel several meters in front of him. As his lenses were undamaged he supposed that flying dirt had hit his eye without injuring it. On testing the eye, however, he found that he could see nothing with it. Even then his regimental surgeon, who had made an external examination and had found no wound or obvious change, assured him that nothing was the matter, but his rank procured him attention, without the need of desertion, and he was referred to us about five days after the injury. No wound could be found in cornea, sclera or conjunctiva, but blood was present in the vitreous and prevented ophthalmoscopic examination. The roentgenogram revealed two fine shrapnel splinters in the posterior upper and inner quadrant of the vitreous, and as vision did not improve during the two weeks following and the eye became somewhat sensitive to pressure, I was obliged to enucleate. The main interest of this case is in the manner of injury. The only possible path for the shrapnel fragments to have taken without breaking the glass before the patient's eye was between bridge and lens, entering the tissues just at the inner canthus, passing behind the transitional fold in this situation and entering the sclera at or just behind the equator.

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[1] Mills, Lloyd: Wounds Received in Battle, The Journal A. M. A., April 10, 1915, p. 1224.

Case 8.—A private was shot in the right lower lid. The shot was supposed to have been merely a gutter shot of the lid, although the reason for a vision of 6/18 was unexplained. No limitation of motion was observed that could not be accounted for by local reaction to trauma. About three weeks after the injury the lower lid became inflamed, and on reopening of the wound an undeformed bullet was found lying snugly in the soft tissue beneath the bulb, slightly in front of the equator, its axis in the coronal plane. Vision returned to 6/6 almost immediately after the removal of the foreign body.

Case 9.—A shell burst just behind a young color-sergeant, and his right occiput was perforated by some of the fragments. He was transferred to our service about two weeks after his injury because of an increasing ulcer of the left cornea. The roentgenograms showed three jagged metal fragments, about the size of beans, lodged in the nuclear region of the upper cranial nerves in and slightly to the left of the middle line of the body. The whole right side of the trunk was paralyzed, apparently from pressure on or destruction of the left pyramidal tract before its decussation. There was complete paralysis of all intrinsic and extrinsic muscles of the left eye, representing lesions of the nucleus of the third left cranial nerve, of the fourth right nucleus and of the nuclei of the sixth nerves. The right external rectus and the superior oblique were paralyzed, and the right pupil was dilated and reacted feebly and sluggishly to strong light. A deep and widely infiltrated ulcer of the left cornea had resulted from the ptosis and combined sensory paralysis.

The left side of the face was wholly paralyzed, the origin being a lesion of the seventh nuclei. This lesion was probably the initial cause of the corneal ulcer, for the left corneal reflex was lost. In such a case the distinction between neuroparalytic ulcer and lagophthalmic ulcer is rather fine. No accurate hearing tests were made, but hearing was greatly reduced in both ears. That the ninth nuclei were also involved was shown by difficulty in swallowing, thick speech and constant drooling. No attempt was made to remove the shell fragments, although such an attempt offered the only frail hope of betterment. The left eye atrophied after iridocyclitis.

8. The last prominent group of cases owes this prominence directly to the use of the modern sharp-pointed, high-powered projectile. These are the sad cases of bilateral blindness, due to destruction of, or vital injury to both bulbs, to both optic nerves, to the retrobulbar vessels, or to any combination of these injuries. While fragments of shells of all kinds are responsible for many of these cases, the modern bullet is the chief instrument in the production of these most terrible of battle-wounds. Victims of the short-range wounds of the regions involved, as has been shown, happily, rarely survive; but the penetration of the modern bullet, at ranges above 1,500 yards, is still so great that it can destroy the visual apparatus of both eyes and yet often allow the victim to live miserably on. Because of its far smaller power of penetration, the older arm at long range far more often led to lodgment of its coarser missile in the bone or brain, before both visual tracts were destroyed. If what I have witnessed in Austria and Germany is any criterion, then the frequency of this terrible injury should, alone, lead to the abandonment of the spitzer bullet, or at least to its modification.

Every clinic is furnishing its heavy quota of these pitiful cases, nearly all of them young, strong men and nearly all so overwhelmed by their terrible misfortune that they would and often do accept any means of suicide when the fact of their blindness finally becomes an assurance to them. When these brave men soberly and earnestly pray for death, it is a pity that any power, whose inhumanity is so wholly responsible for their grief and suffering, will not either make these men and their families quite independent for life, or else give this longed-for boon of euthanasia in slight return for all that has been sacrificed to the names of patriotism and of country.

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ABSTRACT OF DISCUSSION

Dr. Lloyd Mills, Los Angeles: In so far as I am aware, the production of a vacuum by a bullet has never been considered as a factor in the production of trauma. Until the experimental work of Victor Horsley on projectile wounds of the brain, the forward motion of the bullet was held to be its only pathologic one. When the eyeball is struck by the bullet, the principle of incompressibility of fluids comes into play and the globe is always completely shattered.

Dr. John A. Donovan, Butte, Mont.: In addition to the destructive action of the modern bullet, just explained, it has a suction or vacuum-creating action, which in my opinion explains one of its awful death dealing effects. On man this is hard to demonstrate, which accounts for its being so far overlooked, but on larger animals it is marked. I have repeatedly seen the stomach contents evacuated through a bullet exit hole out of all proportion to the size of the hole or any natural pressure effect; also long loops of intestine, apparently drawn through exit bullet holes. To my mind the suction evidence was most conclusive in shooting an elk. My bullet passed through the body, perforating intestines and stomach, broke a rib, was deflected, and broke the front shoulder. Between the ribs and skin, following its course, was fecal matter, completely filling a space about three-quarters inch in diameter, and over 10 inches long. My guide exclaimed in astonishment, "The elk has a gut going to its shoulder." This could occur only by a most powerful suction action, which is furthermore confirmed by the fact that a lung wound in a big animal with these bullets has almost no stopping effect. I refer to our own army 1906 sharp point 150 gr. bullet, turning once in 10 inches, and having a velocity of 2,700 feet per second. The enormous vacuum created can be more easily comprehended by stating that this initial velocity is practically 1,800 miles an hour.

Heart Block.—The prognosis and treatment in heart block depends largely on etiology. Where the block is due to overstimulation of the vagus nerve, such as is seen in digitalis poisoning, stopping the digitalis and paralyzing the vagus with atropin will usually bring about a return to normal. Where the block is complete, heretofore it was thought always to be due to some organic division of the conducting path. We now know that in some of these cases there is not a complete, permanent division of the bundle, but complete block may be due to more temporary causes, such as poisoning from infectious diseases or asphyxia. In this class of cases complete recovery sometimes occurs. Even in the cases of organic origin, after the symptoms of syncope have persisted for some time, a degree of toleration becomes established and circulation is carried on with the slow ventricular rate. Such patients, however, are never able to undertake any but the most restricted activities.—W. H. Lowman.

CHOLECYSTECTOMY AND CHOLECYSTIC TOXEMIA *

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According to the mode of invasion, gallbladder infections may be divided into four types:

1. Portal infection, in which bacteria entering the portal circulation, chiefly from the alimentary tract, escape the bactericidal action of the liver and passing out with the bile, colonize in the gallbladder. This method, described years ago by Adami, has been considered as quite common and is supposed to explain the relationship between appendicitis, intestinal ulceration and other inflammations of the alimentary tract and gallbladder disease.

2. Ascending biliary infection, in which bacteria ascend from the ampulla of Vater through the common and cystic ducts and enter the gallbladder. This process is aided by the reversed mucous currents described by Bond, who showed that carmine particles introduced even as low as the rectum would after a time pass upward against the normal peristaltic current, and be discharged on the surface of the skin through a cholecystostomy opening. Although probably less frequent than other methods, ascending biliary infection occurs in certain inflammations and new growths involving the duodenum.

3. Hematogenous infection, in which bacteria circulating in the general blood stream invade the gallbladder. Rosenow has shown the specific manner in which certain streptococci circulating in the blood, attack the gallbladder or produce gastric ulcer, and his experiments suggest that many causes of cholecystitis formerly considered of a portal or ascending biliary type are in reality focal hematogenous infections. The well-recognized metapneumonic cholecystitis of young children apparently occurs in this way, as does the infection of the gallbladder in typhoid fever.

4. Contiguity infection, in which the gallbladder is involved by the spread of infection from adjacent organs, as when an adjacent abscess perforates, or malignant or benign ulcer of the stomach or duodenum invades the gallbladder. This is a relatively rare form of cholecystic infection.

Frequence: Infections of the gallbladder are exceedingly common. Next to appendicitis, cholecystitis is the most frequent of all the chronic intra-abdominal infections. In some classes of people, notably obese, middle-aged multiparas, it is more frequent than appendicitis. It is the second great cause of chronic indigestion. Inflammation of the gallbladder often develops during the first and second decades, but as the local symptoms are unobtrusive, the condition usually escapes recognition. After middle age, as the local symptoms become more predominant, the diagnosis of gallbladder disease is made. Thus we have been accustomed to consider it a disease of middle or advanced life.

Persistence: Infections of the gallbladder are exceedingly chronic. It has long been known that typhoid bacilli may continue to multiply for thirty or forty years in the gallbladder. It is now recognized that other bacteria likewise may have persistent growth. The bacteria are found in the center of the gallstone, in the bile, and in the mucosa lining the gallbladder wall. Bacteria found in the center of gallstones and within the depths of the mucosa usually represent more or less remote infections and may be associated with bile that is practically sterile. At present, although most of the patients operated on for gallbladder disease have reached the fourth or fifth decade of life, a careful study of the history usually indicates that these same patients acquired their infection in the second or third decade. As yet we have not learned to sterilize the chronically infected gallbladder and the patient once infected may be continuously infected until the gallbladder is removed, or until a violent necrotic form of inflammation destroys the lining of the mucosa and leaves the gallbladder a shrunken, functionless mass of fibroconnective tissue. The temporary relief that follows medical treatment, or a Carlsbad course, prompts the patient and physician to defer operation until advanced pathologic changes have occurred. After a simple drainage operation, the bile clears and the patient is relieved, but the deep infection in the gallbladder wall persists and the symptoms of chronic cholecystitis may later recur. If the symptoms are not of the obstructive type, the patient will usually tolerate them, although not infrequently more radical treatment is demanded.

Symptoms of cholecystitis: Apart from a small area near the neck the gallbladder has no sensory nerves, and distention or inflammation produces no symptoms unless the irritation spreads to adjacent sensitive structures. In operating under local anesthesia, we have repeatedly incised, sutured and crushed the wall of the inflamed gallbladder without pain. Only when traction or pressure affects the ducts, other sensitive organs, or especially the parietal peritoneum, does the patient complain. One should not, therefore, expect local symptoms in inflammations that are limited to the gallbladder proper.

Symptomatically, we would divide chronic cholecystitis into three stages:

First, a stage marked by more or less remote reflex and toxic symptoms and by the absence of local symptoms. This is the stage of cholecystic indigestion and toxemia and represents a period in which the gallbladder factor is usually unrecognized. It usually continues from fifteen to twenty years before the development of the second stage. In this first stage the mortality under operative treatment should be under 1 per cent.

Second, a stage characterized by the movement of calculi, or by recurrent attacks of acute inflammation. Stones cause paroxysms of pain usually by obstructing the outlet of the gallbladder. The attacks are violent, often follow indiscretions in diet, usually require an opiate, frequently occur at night and last but a few hours. To be differentiated are the acute recurrent attacks of cholecystitis in which no calculi are present. The latter are less violent, usually do not require an opiate, last several days instead of a few hours, and have an onset and termination less abrupt than the colic produced by stone. On exposure, these gallbladders are often considered to be normal, the operator, finding no stones or marked evidences of inflammation, concludes he has made an error in diagnosis. The second stage, or stage of acute biliary

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paroxysms, is chiefly observed between the ages of 35 and 55 years. The mortality from operative treatment in this stage is from 3 to 5 per cent.

Third, a final stage characterized by acute and dangerous complications, such as empyema, or gangrene of the gallbladder, obstruction of the common bile duct, acute pancreatitis, rupture or perforation of the gallbladder, malignant disease, acute peritonitis, or intestinal obstruction from stone. These complications marking the third stage of cholecystitis are most frequently observed between the ages of 45 and 75. One of our patients was 80 years of age, seven were over 70. Unfortunately, a large proportion of patients reach the third and dangerous stage of cholecystic infection before coming to operation. That one fourth of all the operated patients of a well-known surgeon should have had associated disease of the pancreas is a sad commentary on medical delay. The occurrence of the third stage of cholecystitis is a reproach to our medical art, and indicates an average procrastination in the effective treatment of cholecystitis of about twenty years. Rather unusually, of course, we meet with exceptions. Thus during the past year I have seen one girl of 14 years with over three hundred gallstones, acute pancreatitis and fat necrosis; and a boy of 15 years with twenty-eight gallstones, localized peritonitis and a gangrenous gallbladder 7½ inches long. The mortality in this stage of cholecystitis probably averages over 20 per cent. The relief from many reflex and secondary symptoms of early biliary infection, the prophylaxis of gallstones and of the dangerous complications of cholecystitis lie in the effective treatment of the first stage of cholecystitis, and therefore the recognition of this stage deserves special consideration.

The evidence of cholecystitis of the first stage is not found in a physical examination of the upper right quadrant of the abdomen, but is to be determined by deductive reasoning. The history of the patient usually reveals a cause of infection which has a relationship to the development of certain reflex toxic, or secondary infectious processes that experience has shown frequently to express cholecystitis. These may be grouped as follows:

(*a*) Digestive: Most common are the reflex digestive symptoms. Fulness and distress after eating, with sour bitter eructations, belching, and more rarely vomiting are usual. There may be a constant foul taste in the mouth, which at once disappears when the gallbladder is drained or removed. The dyspepsia is of the "qualitative" type, rather than the "quantitative" dyspepsia of ulcer; that is, attacks of indigestion often follow certain articles of diet, such as shellfish, cheese, boiled dinners, fried foods, pastries, corn, and the like, and may not be influenced by the amount of food eaten. The patient will often mention an idiosyncrasy toward certain foods. The inability of a patient to handle certain staple articles of diet should suggest biliary disease. It is perhaps the most common condition that causes a patient to report periodically to a physician for relief from attacks of so-called biliousness or indigestion. The attacks are usually relieved temporarily by fasting, dieting, by alkalies, or by a saline or calomel course.

As to the differential diagnosis, transient, often nocturnal, attacks of indigestion in an obese, middle-aged woman precipitated by a dietetic indiscretion and requiring a hypodermic injection for relief, are rarely due to other causes than gallstones. With the history of such preceding attacks, a very violent and persistent attack suggests empyema, or gangrene of the gallbladder; while an attack of superlative severity with shock and epigastric distention and tenderness usually means a pancreatitis. As contrasted with gastric or duodenal ulcer an attack of gallstones lasts a few hours, is most abrupt and severe; an acute cholecystitis a few days and is less severe; while an ulcer attack usually lasts for several weeks and is the least severe. Between the paroxysms from stone or acute cholecystitis, which may be months or weeks apart, the patient usually has a greater degree of dyspepsia than is found between the exacerbations of ulcer. In ulcer, feeding may give temporary relief, "food ease"; while distress accompanies an empty stomach "hunger-pain." In cholecystitis and stone, food exacerbates and vomiting relieves the pain.

(*b*) Intestinal symptoms: The intestinal symptoms of cholecystitis are as yet not fully understood. The continuous discharge of bacteria laden bile into the intestinal tract may give rise to the so-called intestinal indigestion, and in some instances to the symptom of intestinal toxemia, so graphically described by Mr. Lane. It is possible that some of these patients have been given a measure of relief by the removal or elimination of the colon, not because the cause was removed, but because the absorptive surface of the intestine was reduced. There is an association between cholecystitis and appendicitis, the appendix either infecting the portal system and gallbladder, or being coincidentally infected by a common cause. Wohl has reported that in 50 per cent. of our cases in which the removed appendix was also studied, there was evidence of appendicitis.

(*c*) Peritoneal symptoms: Peritoneal symptoms result from acute inflammation or secondary adhesions. The forms of localized or diffused peritonitis that may result from the later stages of gallbladder infection require little special discussion. Attention should be directed, however, to the frequent error in mistaking cholecystitis for appendicitis. An enlarged inflamed gallbladder, with only a small area of the fundus projecting below a Reidel lobe of the liver, frequently produces recognizable peritoneal inflammation only when the exposed fundus comes in contact with the sensitive parietal peritoneum, and this frequently is directly under McBurney's point. In nearly every such instance which we have seen, the examiner, overlooking the less distinct and less sensitive area of resistance which spreads down from the right costal border, has concluded that acute appendicitis was present.

(*d*) Arthritic and muscular complications: Subacute or acute metastatic joint infections are frequently observed in chronic cholecystitis. Often these symptoms improve after cholecystectomy. Chronic joint changes of the type of arthritis deformans are also observed. Myalgic pains are exceedingly common.

(*e*) Cardiovascular symptoms: Few patients pass to the third stage of cholecystitis without some evidence of cardiovascular disease. Endocardial and particularly myocardial changes seriously increase the risk of anesthesia and of operation in long-standing gallbladder disease. To some degree pathologic changes of the arterial wall also have their origin in cholecystic infections. Cardiovascular symptoms may greatly improve after operations on the gallbladder.

(*f*) Respiratory symptoms: We have been impressed by the surprising relief from paroxysmal cough and asthma that may follow cholecystectomy, or cholecystostomy, and we have operated for these symptoms alone. Two of our patients who had been unable to sleep except in a sitting posture for five and seven years, respectively, found they could recline with comfort after the operation, and the asthma and cough disappeared. After a period of relief for some weeks, however, the symptoms recurred. It would seem that cholecystic toxemia is a factor in some of these cases.

(*g*) Cerebrospinal symptoms: In cephalalgia, neuritis and some of the neuroses relief may be obtained by operating on the gallbladder. In the so-called bilious sick headaches we have observed relief after cholecystectomy, and in one violent case we operated for this symptom alone, with relief. In this case the symptom was a sequence to typhoid fever. In certain of the prematurely worn women of middle age, who constantly complain of indigestion, bloating, constipation and a multitude of aches, pains and surface paresthesias, there has been something of a mental transformation after the removal of a chronically infected gallbladder.

(*h*) Fever: Fever without other symptoms may result from cholecystic infection. The bile may be free from pus, the gallbladder bluish and nearly normal in appearance. The fever disappears with the removal of the gallbladder. One of our patients with no local symptoms had been treated in hospitals for months for an apparently causeless continuous fever, that immediately subsided after the excision of what seemed like a normal gallbladder.

(*i*) Eye symptoms: Eye symptoms are not infrequent with biliary disease. At times we find the oculist promising relief from the digestive symptoms of cholecystitis by the application of glasses, or, again, vainly attempting to control a vacillating series of refractive or muscular abnormalities.

DIAGNOSIS

The diagnosis of cholecystitis after opening the abdomen is not always easy. We depend on one or more of the following abnormal conditions:

1. Alteration in the color, size or consistence of the walls of the gallbladder. A milky or whitish gallbladder is diseased, but many translucent, bluish gallbladders are also diseased.

2. Adhesions or other evidence of pericholecystitis. Often the liver adjacent to the gallbladder shows evidence of chronic perihepatitis by whitish plaques or connective tissue trabeculation.

3. Enlargement of tributary lymph nodes: Attention has been especially directed by W. J. Mayo to the lymph nodes. The palpating finger is introduced into the foramen of Winslow and the nodes near the junction of the cystic and common ducts examined. While such lymph-node enlargements usually indicate cholecystic infection, they may also occur from pancreatic or duodenal disease. Absence of enlargement unfortunately does not negative cholecystitis. At times we have observed the absence of adenopathy in purulent or gangrenous as well as in catarrhal cholecystitis.

4. Alterations in the bile contained within the gallbladder: Normal bile is of a clear golden yellow color; turbid, purulent, dark green, tarry bile, or bile containing crystals, sand or calculi, indicate cholecystitis. Colorless mucus indicates cystic-duct obstruction and a mucocele. For diagnostic aspiration, to avoid leakage, should the gallbladder not be removed, a fine needle should be introduced into the gallbladder through a thin layer of overlying liver substance.

5. Alterations in the mucosa: Papillary denudations producing the finely speckled or strawberry gallbladder, papillary outgrowths, infiltrations of the mucosa as well as the grayish, greenish or blackish wall, or sloughs seen in empyema or gangrene, indicate varying grades of gallbladder disease.

PROGNOSIS

Cholecystitis may be alleviated by dieting, alkalies, salicylates, vaccines or a saline or Carlsbad course. It is more surely curable by the operative removal or obliteration of the mucous lining of the gallbladder. Most patients who finally come to operation have had some degree of relief from dieting, or various medical measures. In a woman who, for six years, following typhoid fever, had suffered from indigestion, headaches, myalgia, bromidrosis and foul taste, the symptoms almost completely disappeared after a course of typhoid vaccines. Except in the third stage of cholecystitis which brings an immediate danger to life, operation is usually delayed or considered unnecessary. At present, surgery, which is about the only permanently effective therapeutic measure against cholecystitis, is about twenty or thirty years behind the pathology of the disease, usually ignoring the early stages of inflammation and cholecystic toxemia, permitting years of morbidity and crippling tissue changes to supervene, and only intervening when a violent local reaction drives the patient to the surgeon.

OPERATIVE TREATMENT

Anesthesia: An anesthetic may increase the danger of operation on the biliary tract by depressing the cardiac and respiratory systems, adding to the preexistent toxemia, inhibiting elimination, and by producing straining movement, violent respiratory action and rigidity of abdominal muscles, that so embarrass the surgeon as to invite dangerous technical errors. At the Samaritan Hospital during the past three years, one patient with a perforated gallbladder and an upper abdominal peritonitis, was asphyxiated by profuse, regurgitant vomiting, while under spinal and narcotic anesthesia. In a second patient with myocarditis, cholecystitis and acute peritonitis there was a fatal respiratory cardiac failure. A third similar fatality occurred under the administration of ether. We have been able to reduce the mortality by substituting local anesthesia for patients who are bad risks. The local anesthetic solution is used very freely, 1 per cent. of novocain being employed for the skin and subcutaneous tissues, and a 0.25 or 0.5 per cent. solution being employed for the muscular, fascial and peritoneal layers. A free injection of such weak anesthetic solutions seems not only harmless but often beneficial, acting like a hypodermoclysis in assisting elimination. If the patient's general condition permits, a moderate supplemental narcosis produced by morphin-scopolamin is used. Especially in the very old, the very toxic or asthenic with empyema or gangrene of the gallbladder, or perforation and peritonitis, do we prefer local anesthesia. For patients in better physical condition, we prefer spinal anesthesia because it does not interfere with elimination or increase preexisting toxemia, and at the same time gives far better relaxation than ether does. It is dangerous for operations on the gallbladder in obese elderly patients who are toxic and have serious myocardial change. Rectal anesthesia, from its especially intense action on the liver, should be avoided.

Incision: A simple transverse incision made along a line slightly below the level of the ninth rib is valuable when operating under local anesthesia, especially if the gallbladder is large and there is marked muscular rigidity. In such a case the gallbladder and liver margin may be made to protrude from the opening and retraction and the introduction of pads within the abdomen are unnecessary. It is especially adapted for cholecystostomy, although occasionally a cholecystectomy may very conveniently be done. For the former operation a shorter incision may be employed, the different layers being divided along the same line. To give a better exposure of the ducts, a triangular flap incision, as suggested by Perthes, may be used. A right transrectus incision is made from the ensiform directly downward for 3 or 4 inches, from the lower end of this vertical incision a transverse incision is made to the right to a point just below the right costal margin. The vertical part of the incision is carried through the rectus to the posterior sheath and guided by the finger introduced behind the rectus fibers; two or three sutures of catgut are placed above and below the line of the transverse incision in such a manner as to fix the rectus muscle to the overlying aponeurosis, so that the divided muscle will not retract. The muscular and aponeurotic layers are now divided along the line of the transverse incision and the triangular flap thus formed turned upward and outward over the chest wall. The peritoneum and preperitoneal fascia are now divided along a line parallel with the costal border and about one-half inch distant from it. To avoid the objectionable right-angle incision of the skin, I have modified Perthes operation by substituting a simple oblique skin incision which is made parallel with the costal border after the plan of Kocher.

Alexander Don, to obtain a greater exposure and to avoid injury to the intercostal nerves, extends the vertical portion of the incision down to the level of the navel, and curves the transverse portion of the incision upward and outward toward the right axilla. The rectus muscle is completely freed and divided below and the posterior sheath of the rectus and peritoneum divided along the same lines as is the skin.

In patients with relaxed or thin abdominal walls a simple vertical transrectus incision often serves very well.

Cholecystectomy: In the first stage of cholecystitis, cholecystectomy is the preferred operation. It is the most effective method of treating the protean manifestations of the disease. The patients are usually under middle age, are not very obese and come to the operating table in good physical condition. With a perfect technic the operation in this stage should be a safe and satisfactory one, but unfortunately there are serious technical dangers always present in doing a cholecystectomy; an unfortunate snip of the scissors, a careless needle puncture or an imperfect ligation, is all that is required to place the patient's life in jeopardy, and these accidents have caused many surgeons to resort to ostomy when an ectomy would be the better operation. Even so skilful an operator as Moynihan reports three cases in which an hepatic or common duct was wounded. In my first ectomy, a case in which there were extensive intra-abdominal adhesions, the divided cysticus was imperfectly occluded and a secondary fatal leakage of bile into the peritoneal cavity occurred. In a recent case the gallbladder was distorted and displaced by adhesions, and on closing the peritoneal edges over the gallbladder bed, biliary leakage, evidently from a punctured displaced hepatic duct, occurred. The stitches were removed and drainage was instituted, with recovery. We have had three other cases of accidental duct injury or imperfect ligation of the cystic duct during cholecystectomy. These accidents are less frequent when the operation is performed in the first stage of cholecystitis. Since the first case we have now had 114 ectomies during the first stage of cholecystitis without operative mortality. In this stage the gallbladder is usually best removed from within outward, after the method so well illustrated by the Mayos. The cystic duct should be doubly ligated, mass ligatures should be avoided, as should anything which may serve to distort or obstruct the ducts. The cystic artery should be individually tied. Wide flaps of peritoneum should be separated from the gallbladder to cover the denuded area left under the liver. If there is any question as to absolute hemostasis or duct occlusion adequate drainage should be employed, so arranged or anchored by fine catgut that it cannot be displaced. In most of our ectomies we have been able to avoid all drainage. In cases of the second or third stage when the gallbladder is distorted or imbedded in adhesions, it may be safer to remove the gallbladder from without inward. In this way, by hugging the gallbladder very closely, there is less danger of damaging the hepatic or common duct. In case the adhesions are very marked, the method of Kehr of first splitting down the interior surface of the gallbladder at least into the cystic duct, is an advantage in determining the relationships of the parts.

Cholecystostomy: External biliary drainage, considered by the late Dr. Maurice Richardson only ten years ago, the one established therapeutic fact in biliary surgery, has a progressively lessening sphere of usefulness. Its use should be largely restricted to the third stage of cholecystitis for cases of empyema, perforation, gangrene, pancreatitis, advanced peritonitis or duct involvement, associated with such grave systemic changes due to age, toxemia or exhaustion, that only the simplest of operative procedures are warranted. It also should be used when technical limitations indicate that an ectomy will be dangerous. Under certain favorable conditions by performing cholecystectomy, we have been able to avoid drainage even in cases of empyema, gangrene of the gallbladder and acute pancreatitis. As a rule, the virulence of the bacteria found in empyema or gangrene against the skin and subcutaneous tissues is less than that of the bacteria found in purulent forms of appendicitis.

As cholecystectomy is the great measure of prophylaxis, it should be performed more frequently and much earlier and should have a progressively lower mortality than cholecystostomy.

If reasonably safe and feasible the appendix should also be removed in operating for cholecystitis. Despite certain results of animal experimentation, clinical evidence indicates that a patient is better off without than with a chronically infected gallbladder.

MORTALITY

The mortality of cholecystectomy is due to: 1. Poor judgment in selecting patients with acute febrile and septic conditions, or patients greatly debilitated by age, chronic toxemia or complete and continued external drainage of bile. This latter class who have what we may term "cachexia-choleoprivia" bear operation very badly, readily falling into a condition of fatal shock irrespective of the operation or anesthetic employed. For them a simple Witzel enterostomy should first be done under local anesthesia and the bile shunted from the fistula into the bowel by a small rubber tube. The final operation should be delayed until the cachexia, due to the loss of bile, has been overcome.

2. Technical errors: Leakage of bile into the peritoneal cavity may result from the cystic duct having been imperfectly tied, or the common or hepatic duct torn, incised or punctured. In the case of bile leakage, if the general peritoneal cavity is not sufficiently protected by drainage and tamponade, a dangerous or fatal peritonitis may result. I have been impressed by the danger of (*a*) doing cholecystectomy in a private house where adequate light and sufficient exposure cannot be obtained; (*b*) separating the overhanging neck of the gallbladder without observing great care in hugging the gallbladder proper to avoid the adjacent communis; (*c*) puncturing the hepatic duct. The gallbladder may lie obliquely so that the hepatic duct is in the peritoneal fold to the side of the neck of the gallbladder, where it may be damaged in suturing over the gallbladder bed; (*d*) relying on insufficient tamponade for drainage in the presence of a biliary leak. In all cases, as an indicator, we place the end of a gauze sponge against the stump of the cystic duct, which is not removed until the end of the operation. Should this show staining by bile, we immediately reopen and control or isolate the area.

In a personal experience of 270 operations on the gallbladder and ducts, fifty-seven ectomies were done before 1912 with ten deaths, a mortality slightly over 17 per cent. In thirty-eight ostomies before 1912, there were three deaths, a mortality of 7.8 per cent. In 121 ectomies performed since 1912, there were two deaths, a mortality of 1.6 per cent. In forty-two ostomies since 1912 there were four deaths, or about 9 per cent. mortality. Before 1912, gangrenous and suppurating gallbladders were usually removed; now they are usually drained under local anesthesia. As having even a greater influence on the mortality is the stage in which the operation is done. In 114 cases of ectomy in the first stage of cholecystitis, irrespective of date or technic, the mortality was 0.88 per cent. In 101 operations in the second stage, sixty-seven being ostomies, there were four deaths, a mortality of 3.9 per cent.; while after fifty-four operations in the third stage of cholecystitis, there were eighteen deaths in which the operation or biliary condition was a factor, a mortality of about 32 per cent. Thirty of these patients had acute gangrenous or suppurative cholecystitis, seven an acute pancreatitis with fat necrosis. Twelve had primary or secondary operations for duct obstruction, fistula or duct or intestinal anastomosis. In only one patient was carcinoma observed, and this involved the ducts. In two cases, intestinal obstruction from gallstone existed. In another case an intestinal perforation had been produced. One death was from diabetic coma and one from pulmonary embolism. It is evident that the stage of the disease is more important than the type of operation in determining the mortality.

SUMMARY

We consider inflammations of the gallbladder as bacterial infections of childhood or early adult life, as progressing for years, during which time secondary metastatic, toxic or reflex symptoms only are observed; as later having a second stage in which there are attacks of colic due usually to the presence of gallstone; as having usually after twenty or thirty years a third stage of serious complications, such as duct obstruction, pancreatitis, perforation, abscess or gangrene. We consider surgery as working, for the most part, far behind the pathology of the disease, and believe there is wide need for earlier intervention, so that the patient who starts at the age 12 or 15 with cholecystitis and dyspepsia may not at 35 have gallstone colic, and may not at 65 succumb to cholecystic gangrene or pancreatitis. We consider external biliary drainage as a rule undesirable, except in the late or complicated cases, an early cholecystectomy the operation of choice. Unfortunately, technical dangers make uniform success after cholecystectomy uncertain in the hands of the average surgeon. Despite this, the mortality of cholecystectomy in the first stages of cholecystitis is much less than cholecystostomy in the last stages of this disease, so that the results of a surgeon may depend more on *when* he operates than *how* he operates. The morbidity depends on *how* he operates.

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ABSTRACT OF DISCUSSION

Dr. Robert C. Coffey, Portland, Ore.: In dealing with third stage, acute stage cases, in which there is an infected gallbladder, I wish to emphasize conservatism. It is often the case that these gallbladders may be enucleated by a simple incision of the peritoneum and peeled out practically without bleeding at all. There are some cases, however, in which this is not advisable. I refer to acute and violent septic cases. The point I wish to emphasize particularly is that this area must be quarantined properly. Expose the field thoroughly and place a large pack of gauze wicks laid straight down around the gallbladder, and around these wicks several layers of rubber tissue. Open the gallbladder, sponge out the fluid and insert a piece of gauze into the gallbladder. That is all that is necessary. It will take approximately five minutes. Many are gangrenous without widespread infection and it is quite safe, in these, to enucleate the gallbladder, which I say is easily done without hemorrhage at all. The gauze wicks of the pack are removed after six days and the rubber tissue in two weeks. In some instances it will be necessary to remove the gallbladder at a later operation.

Dr. W. Wayne Babcock, Philadelphia: In the young no drain may be required after ectomy. There is less danger of skin infection from removal of the gangrenous or suppurating gallbladder than from removal of a badly infected appendix, and therefore as far as wound infection goes, less need for wound drainage. When the patient is in good general condition, we may, therefore, in selected cases remove the badly infected gallbladder, close without drainage, obtain primary union, and a remarkably quick recovery. One patient went home a week after the removal of a gangrenous gallbladder. But as a rule, and especially if the patient has reached middle age and the gallbladder is gangrenous, ectomy is dangerous. In these cases we use local anesthesia, make a simple transverse slit, put in a drain, and sometimes even operate without removing the patient from the bed. The sloughs of the gangrenous gallbladder will be expelled with relative safety, while the removal of the gallbladder, by opening many lymph spaces, may be followed by rapid sepsis and overwhelming toxemia.

THE REFRACTOMETRIC DETERMINATION OF ALBUMIN, GLOBULIN, AND NONPROTEIN

IN NORMAL HUMAN BLOOD SERUM *

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The microrefractometric method recently described by T. Brailsford Robertson[1] has enabled us to determine the amount of albumin and globulin in normal human serum. The specimens of serum which we have employed for this purpose have been obtained from students, nurses and doctors working in the hospital, who are in good health. No serums of patients have been used to establish these normal valuations.

In brief, the method is as follows: Blood is drawn into centrifuge tubes, allowed to clot, and centrifugalized. A portion of the clear serum is treated with an equal volume of saturated ammonium sulphate to precipitate the globulins, and the precipitate removed by centrifugalizing. The clear fluid is diluted to one-half and read in the refractometer. This reading, corrected for ammonium sulphate, gives the total albumin plus the nonproteins. The nonprotein value is determined from the clear fluid remaining after the proteins have been removed from another portion of the serum by heat and acetic acid. The total globulins are obtained by subtracting the refractometric reading of the albumins from that of the whole serum, after deducting the value of the nonproteins.

Emil Reiss has carried out extensive refractometric determinations of the total proteins of serum in normal as well as in pathologic cases. A monograph[2] containing a full account of his entire work and references to a great number of articles by other writers appeared about two years ago, and recently he has published a brief review[3] of this work, including that of the last two years.

Reiss obtains only the value of the total proteins in his work. In estimating this single value, moreover, Reiss considers the nonproteins constant enough, even in pathologic cases such as nephritis and diabetes, to give them a set value having a refractive index of 0.00277. Robertson has always considered this value too high, and has assumed that a more accurate constant value is obtained from the reading of sixth-molecular sodium chlorid, thus placing it around 0.00157.

At the beginning of our work, we saw the necessity of the individual estimation of the nonproteins in each pathologic case to assure accuracy. We have, therefore, determined the nonproteins or normal serums, giving us an average value of 0.00175. This is considerably lower than the value of Reiss, and lies nearer that assumed originally by Robertson. If it is desired to express the concentration of the nonproteins in percentages, this may be done with sufficient accuracy by dividing their observed refractivity by the constant factor of 0.00160. Many observers in cases of nephritis have shown increased percentages of nonproteins as compared with the normal. Thus, even in normal cases, about 0.6 per cent. error occurs when the constant value of Reiss for nonproteins is used, and it is evident that when the pathologic cases are dealt with, the error would be considerably greater. It is true that the method of Reiss is much simpler than that of Robertson, and that his error is not excessive. Yet the data obtained by the latter method gives not only an accurate determination of the total proteins as well as of the nonprotein elements, but also the amounts of albumin and globulin which go to make up the total proteins.

In normal individuals we have found that:

1. The total proteins range between 6.7 and 8.7 per cent., which corresponds to the figures of Reiss, which, he says, lie "in round numbers between 7 and 9 per cent." The average value equals 7.94 per cent.

RESULTS IN NORMAL CASES

Name	Sex *	Age	Weight in Pounds	Total Protein	Total Albumin	Total Globulin	Nonproteins	Albumin per cent.	Globulin per cent.	Nonproteins per cent.
A. R.	♂	25	208	8.59	7.28	1.31	.00174	85	15	1.09
A. R.	♂	25	208	8.51	6.86	1.65	.00182	81	19	1.14
A. R. †.....	♂	25	208	8.45	7.79	.66	.00182	92	8	1.14
H. K.	♂	17	170	7.33	5.79	1.54	.00158	79	21	.98
H. K.	♂	17	170	7.90	5.86	2.04	.00172	74	26	1.075
A. S.	♂	46	180	7.23	5.71	1.52	.00172	79	21	1.075
A. S.	♂	46	180	6.70	5.21	1.49	.00190	78	22	1.19
F. K.	♂	32	155	8.17	6.21	1.96	.00172	76	24	1.075
W.	♂	29	160	7.77	6.32	1.45	.00172	81	19	1.075
D.	♂	20	145	7.98	6.71	1.27	.00172	84	16	1.075
Cal.	♂	22	150	8.16	7.	1.16	.00188	86	14	1.17
H. W.	♂	25	160	8.	6.50	1.50	.00172	81	19	1.075
A. K.	♂	30	165	8.02	6.89	1.13	.00172	86	14	1.075
F. B.	♂	27	150	8.08	6.52	1.76	.00172	78	22	1.075
Bes.	♂	31	140	7.81	6.30	1.51	.00172	81	19	1.075
S.	♂	24	160	8.24	6.71	1.53	.00172	81	19	1.075
G. ‡........	♂	38	175	7.85	5.31	2.54	.00172	68	32	1.075
T. D.	♂	30	165	7.53	5.94	1.59	.00172	79	21	1.075
Lin.	♂	24	150	7.78	6 44	1.34	.00188	83	17	1.175
Ow.	♂	24	165	8.35	6.23	2.12	.00188	75	25	1.17
Go.	♂	25	185	8.09	6.82	1.27	.00188	84	16	1.17
Wil.	♂	22	155	8.27	6.71	1.56	.00172	81	19	1.075
Fal.	♂	31	194	8.70	7.70	1.	.00172	89	11	1.075
FL.	♂	24	170	8.	6.12	1.88	.00172	77	23	1.075
Lib. §......	♂	29	140	7.43	4.95	2.48	.00172	67	33	1.075
L.	♂	35	155	7.74	5.64	2.10	.00188	73	27	1.17
Miss M. ...	♀	25	160	7.91	6.12	1.79	.00172	77	23	1.075
Dr. W.	♀	28	160	7.56	5.71	1.85	.00172	76	24	1.075
Miss F.	♀	23	150	8.05	5.85	2.20	.00188	73	27	1.17
Miss L.	♀	22	140	7.91	5.74	2.17	.00172	73	27	1.075
Dr. M.	♀	32	150	7.87	5.74	2.13	.00172	73	27	1.075
Miss S.	♀	19	150	7.87	6.14	1.63	.00172	79	21	1.075
Miss Lom..	♀	26	160	8.28	5.74	2.54	.00172	69	31	1.075
Miss Sch. ..	♀	22	145	8.03	6.10	1.93	.00172	76	24	1.075
Averages...	...	27	163	7.94	6.20	1.74	.00175	78	22	1.09

* In this column, ♂ indicates male, and ♀ female.
† This serum is not used to get average values.
‡ This subject had boils six months ago, though physical examination is negative now.
§ This man had eaten very little for several days.

2. The total albumins lie between 4.95 and 7.7 per cent., with an average value of 6.20 per cent., or between 67 and 89 per cent. of the total proteins, with an average value of 78 per cent.

3. The globulins lie between 1 and 2.54 per cent., with an average value of 1.74 per cent., or between 11 and 33 per cent. of the total proteins, with an average value of 22 per cent.

4. The nonproteins lie between 0.98 and 1.19 per cent., with an average of 1.09 per cent., and have a refractivity varying from 0.00158 and 0.00190, with an average of 0.00175.

The first seven results in the table are of interest. The first three were taken from the same person on the same day, the first immediately on awakening, the second four hours after breakfast, and the third one hour after a hearty meal. The first two results are practically the same. The third result shows an increased proportion of albumin to globulin. Robertson[4] has observed that fasting in the rat produces an increase in the proportion of globulin in the blood serum, while our one observation gives an increase in the proportion of albumin soon after a hearty meal. This supplies an instance of the value of estimating the ratio of albumins to globulins. No peculiarity would have been discovered in this serum if Reiss' method had been used. The fourth and fifth serums and the sixth and seventh serums were taken from two subjects on different days at a time from three to four hours after breakfast, and no essential differences on different days were found. From this we conclude that, in order to obtain comparable results, blood should be taken from patients under comparable conditions. The specimens of blood used to establish our normal values have been taken either before breakfast, or from three to four hours after meals. (Serum 3 was not used in the calculation of the averages.) No appreciable amount of muscular work had been done immediately before the experiment by the subjects from whom we withdrew blood. We considered it unnecessary and unpractical to establish our normal from persons who had been in bed for twenty minutes before the withdrawal of the blood, as Reiss[3] advises.

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* From the Medical Division of the University of California Hospital, and the George Williams Hooper Foundation for Medical Research.

[1] Robertson, T. B.: Jour. Biol. Chem., 1915, xxii, 233

[2] Reiss: Ergebn. d. inn. Med. u. Kinderh., 1913, x, 531.

[3] Reiss: Deutsch. Arch. f. klin. Med., 1915, cxvii, 175.

No definite differences can be noticed in the results due to the age of the subjects. The percentage of globulin is consistently higher, however, in the women examined than in the men.

We have attempted in this series to give the mean values of the proteins in normal healthy subjects, and to indicate the normal variations above and below the mean. More observations are needed to bring out fluctuations due to such factors as diet, starvation and muscular effort.

Work in diseased conditions is to follow.

IMPORTANCE OF THOROUGH EXAMINATION IN UROLOGIC CASES*

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CHARLOTTE, N. C.

In presenting this paper, I desire to illustrate and emphasize the value of the use of every available aid at our command not only from a diagnostic but also from a therapeutic standpoint. For this purpose, I will briefly report a series of cases which lately came under my observation.

The first series is that of stone in the ureter and kidney; second, pyogenic infection; third, new growths, and fourth, tuberculosis.

It would be impossible to discuss any one of these conditions fully in the time allotted me, therefore these cases will be used only to illustrate and emphasize a few cardinal principles in the diagnosis and treatment of these cases.

Of the twelve cases of stone (nine ureteral and three kidney) I shall use for this purpose, five were reported negative from the Roentgen-ray department. These were in the ureters and were located by the use of the ureteral catheter. The first was lodged about 1 inch above the ureterovesical opening. Two unsuccessful efforts were made to dislodge it with the ureteral catheter and sterile oil. A suprapubic cystotomy was performed, the ureteral opening enlarged and the stone removed through it with some difficulty.

In the second case, in which the Roentgen ray was negative, the stone was twice located with the ureteral catheter about 3 inches below the kidney pelvis and two unsuccessful efforts were made to dislodge it. A left rectus incision was made and the peritoneum deflected from the left abdominal wall all the way from the anterior incision back to and over the ureter, and the stone was removed through a small ureteral incision. A cigaret drain was inserted through a stab wound in the back and the patient made a rapid and uneventful recovery.

The Roentgen ray was also negative in the third case, but the stone was located and dislodged by catheterization. The patient suffered several typical attacks of nephritic colic for six months before she was referred to us. In this case the left ureter was catheterized without difficulty and found to be functionating normally, but a decided obstruction was encountered in the right ureter 4 inches above the ureterovesical opening. This was finally passed and 8 ounces of urine were withdrawn from this kidney before it began functionating intermittently, which, of course, demonstrated a hydronephrosis. The catheter was then withdrawn below the point of obstruction and 2 c.c. of a 2 per cent. solution of cocain were injected. The latter was done with the hope that a relaxation of the muscular fibers of the ureter might be obtained and in this way the passage of the stone into the bladder secured. Relief followed, and on cystoscopy the second day thereafter, the stone was seen in the bladder.

There may yet be uric acid stones in this kidney, but the value of the ureteral catheter was forcibly demonstrated here, not only from a diagnostic, but also from a therapeutic standpoint, since we were enabled to dislodge the calculus and cause it to pass into the bladder.

The fourth case was that of ureteral stone producing the usual symptoms for two weeks previous to the time the patient came under my care. This we easily located with the Roentgen ray about 6 inches above the vesico-ureteral opening. The ureteral catheter was used here not only to verify the Roentgen-ray findings but to dislodge the stone if possible. Following the second ureteral catheterization, the injection of cocain and oil, the stone passed into the bladder and the patient, a physician, was spared an operation.

In the fifth case, the Roentgen-ray findings were negative. The symptoms were typical of nephritic colic. Firm percussion over the left kidney was unbearable. These symptoms had persisted for six days.

On ureteral catheterization, obstruction was encountered 9 inches above the ureterovesical opening. No urine was secured until this point had been passed, when 20 c.c. of a bloody urine were withdrawn.

The same procedure was followed in this as in the above-mentioned cases. The patient was prepared for operation the following day, but cystoscopy, before administering the anesthetic, enabled me to demonstrate to my associates the cause of the greatly improved condition of my patient. The bladder was dotted with fragments of stone—one yet remaining in the ureteral opening. This was removed with the beak of the cystoscope.

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[4] Robertson, T. B.: Jour. Biol. Chem., 1912, xi, 179; ibid., 1912, xiii, 325.

* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

In four other cases of ureteral stone—one of which was reported negative from the Roentgen-ray department—the patients were treated in the same way, but unsuccessfully with two. These stones had to be removed by operation.

The two cases in which this plan failed were not suitable for this procedure. The ureteral occlusion had persisted sufficiently long to inhibit the kidney function. This is very important, since the pressure behind the stone is kept up by kidney functional activity and forces the stone into the bladder while the muscular fibers of the ureters are under the influence of cocain.

Of these nine cases, the Roentgen-ray findings were negative in five and the diagnosis was made with the cystoscope, ureteral catheter and by means of the typical clinical symptoms. In the remaining four cases the Roentgen-ray findings were verified and five of the nine patients were spared operation.

Another valuable aid in diagnosing ureteral and occasionally pelvic stone is the wax-tipped ureteral catheter. Scratches in the wax made by them can easily be detected with a magnifying glass.

In all the cases of kidney stone in this series Dr. Squires was able to demonstrate them by roentgenography. In these, we found the ureteral catheter, in connection with the phenolsulphonephthalein test, of incalculable value in ascertaining the amount of kidney destruction produced by them and in determining the best surgical procedure to pursue. To illustrate, I will briefly report three cases of kidney stone which show the different degrees of destruction produced by them.

The first was a case in which there was a small stone in the kidney pelvis. Ureteral catheterization showed only a slight pyelitis and its functional activity normal. No kidney tissue had been destroyed. The stone was removed by pyelotomy. There was practically no leakage of urine following the operation.

In the second case the stone was much larger, extending considerably into the kidney parenchyma. Urine obtained by ureteral catheterization indicated only a moderate amount of pyogenic infection, but the phthalein test indicated considerable kidney destruction. In this case the stone was so large, though there was only a mild infection, that we decided nephrectomy advisable since it would be impossible to remove the stone without lacerating the kidney considerably in so doing. This would almost certainly be followed by a return of stone formation.

The third case was one in which we not only had to deal with a large stone, but active infection as well. The phenolsulphonephthalein output from this side was very poor. In this and the preceding case, the phenolsulphonephthalein output of the opposite kidney was good and we had no hesitancy in removing the stone-bearing kidney. These patients seemed to suffer no inconvenience following nephrectomy and made excellent recoveries.

Of the great number of cases of pyogenic infection which have fallen into our hands, I shall, instead of reporting individual cases, speak of the types of most importance and the means of arriving at a diagnosis and of ascertaining the plan of treatment that should be instituted. (Deviating a little, I will say that the channel through which infection takes place in these cases depends principally on their predisposing causes, that is, whether it occurs through the hemic or lymphatic circulations or by ureteral ascent. The majority of the parenchymatous infections, of course, is through one of these circulatory systems and the source of such infections may be in any part of the body. The predisposing causes of infection through the urinary bladder are stricture, hypertrophy of the prostate, or any condition or disease interfering with the normal elimination of the urine. To ascertain, then, just the nature and extent of these various infections, ureteral catheterization, functional activity tests and bacteriologic examination of urine thus obtained is absolutely necessary, not only from a diagnostic standpoint, but also for the purpose of securing bacteria for autogenous vaccination. An ascending infection with normal ureters practically never occurs, as the urine is constantly flushing the ureters from above downward. In this way nature protects herself. But with residual urine, infected bladder and dilated ureters, ascending infection is very common.)

An idea as to the location of pathologic conditions in the urinary tract may be obtained by the ordinary chemical and microscopic examinations of the bladder urine, but to ascertain definitely the location and extent of these, the ureteral catheter and functional tests are absolutely indispensable. Pus in urine thus obtained means infection and the extent of this infection, that is, whether it be limited to the pelvis or extend into the parenchyma of the kidney, may be ascertained by the quantity of pus thus secured and the functional activity ascertained by the phenolsulphonephthalein test. For instance, if we have a pyelitis, pus and blood are secured by ureteral catheterization, but the functional activity is normal. The exciting cause of this pyelitis may be ascertained by bacteriologic examination. If the secreting portion of the kidney is involved as well, then the functional test will be affected in proportion to the amount of kidney destruction.

An illustration of the value of ascertaining the phenolsulphonephthalein output is shown in the following case of tumor of the kidney.

Mr. B. H., aged 38, consulted me for intermittent painless hematuria. The ureters were cathetrized and I found that the blood was coming from the right kidney, but no pus was secured. The phenosulphonephthalein output was about normal and the two kidneys equal in their secretory power. The patient presented himself from time to time for examination extending over a period of eight or ten months. With each subsequent ureteral catheterization the output of the right kidney grew less and that of the left greater until it was more than double that of the opposite kidney. The diagnosis of hypernephroma was made. The kidney was finally removed and the diagnosis sustained by the pathologist.

Several cases of hypernephroma have fallen into my hands but none so early and in which the progress was watched so closely or the value of the phenolsulphonephthalein output so forcibly demonstrated as in this case, but in all of them it has been in proportion to the kidney parenchyma destruction.

Two cases of tuberculosis of the kidney illustrate, first, the importance of recognizing and properly interpreting its early symptoms; second, some simple methods of making accurate diagnosis, and third, points of value which will aid us in determining our plan of treatment.

The first case is that of early primary tuberculosis. This was referred to me as one of subacute cystitis, the symptoms probably being augmented by bladder stone. Urination was frequent both day and night, from the beginning. This, with only a small amount of pus and practically no blood, at once led us to suspect tuberculosis of the kidney. Cystoscopy showed marked congestion of the trigon with slight ulceration around the right ureteral opening. Urine obtained from this kidney showed the presence of a trace of albumin, a moderate amount of pus cells and an occasional blood corpuscle. A centrifugalized specimen was injected into the peritoneal cavity of a guinea-pig. A specimen was also stained and tubercle bacilli found. The patient could not be operated on at once but returned in five weeks for this purpose. At that time the pig was killed and the peritoneum, liver and kidneys were found to be filled with tubercles.

The patient's kidney was removed and the lower third found to be filled with small tubercles, but with no abscess formation. His urine, which had previously been filled with pus, immediately cleared up and the bladder symptoms subsided. The patient gained 25 pounds in weight in two months. At present, twelve months after, there is no evidence of tuberculosis anywhere in the body and the patient is in excellent health.

The second case was one of two years' standing. The patient suffered intensely with cystitis and lost 93 pounds in weight during this time. On account of extreme sensitiveness of the bladder and its decreased capacity, ureteral catheterization was accomplished with much difficulty. In fact, several efforts were made before we succeeded in catheterizing his left ureter. An ulcer, located at its opening, made it unusually difficult.

The urine secured from the right kidney was filled with pus and tubercle bacilli. The phenolsulphonephthalein output was very poor. No bacilli, pus or blood were found in the urine from the left kidney, but tuberculous peritonitis was produced in a guinea-pig with urine from this, as well as from the right. These bacilli probably came from the ulcer at the ureteral opening. With a negative urine, however, a 40 per cent. phenolsulphonephthalein output of the opposite kidney the first hour, and with the great probabilities of this kidney becoming involved, if it had not already become so, I had no hesitancy in removing the right kidney. This was done six months ago; the patient rapidly gained in weight and strength and his bladder symptoms wonderfully improved in a very short time and he is now free from suffering and apparently a well man.

In determining kidney functional activity we have found blood urea estimation in connection with the phenolsulphonephthalein test of incalculable value. It is of especial service following prostatectomy. In these cases, the urine cannot be accumulated to estimate the phenolsulphonephthalein output and the blood can always be obtained and the urea retention estimated.

Of all the functional tests we have used, we find ourselves relying more and more on these two and in our experience, as the phenolsulphonephthalein increases, the urea decreases and vice versa. The latter furnishes evidence of impending uremia but it should always be used as an adjunct, since the determination of the cumulative phenomena is of great prognostic value, although its absence may be misleading, which makes it necessary to ascertain the combined results of these tests.

CONCLUSIONS

1. Every available means should be employed for diagnosing and determining the best therapeutic measures to pursue in diseased conditions of the genito-urinary tract.

2. The majority of ureteral stones can be removed by the injection of cocain and oil, provided the ureters are normal and it is done soon after impaction.

3. The kidney functional tests, especially phenolsulphonephthalein and blood urea, are of the utmost importance in determining the condition of the kidneys before operation, and that after prostatectomy, the blood urea, which must then be used alone, is of the greatest value.

Realty Building.

THE MECHANISM OF URINATION*

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The mechanism of urination has not been determined in all its detail, but a large amount of work has been done, and by correlating the work of the anatomist and the physiologist with that of the clinician, the physiology of urination can scarcely longer be regarded as problematic.

Enough has been determined to be of great assistance in the diagnosis of diseases of the urinary tract, and to establish definite principles of inestimable practical value in genito-urinary surgery.

It must be admitted that many of the unsatisfactory results following operations on the bladder neck and urethra have been due to a disregard for the underlying principles of the physiology of the mechanism of urination.

It is the purpose of this paper to present in a correlated form the present status of knowledge of the act of urination, together with some observations which I have carried out on the physiology of the bladder and urethra.

The nervous mechanism is especially complex and interesting. For a number of years it has been maintained that in animals, at least, there are centers of urination outside of the spinal cord. Experiments of Sokowin (1784), Nussbaum (1879), Nawroki and Skadichewaki (1891), and Justchenke (1897), have demonstrated that the inferior mesenteric ganglion contains a reflex center for vesical contraction.

Von Zeissl,[1] from his researches, concluded that there are centers for urination within the bladder wall itself. This observer divided all of the nerves to a dog's bladder, that is, completely isolated the bladder from the central nervous system, and the sympathetic ganglia of the pelvis, and in spite of this the animal retained urine and emptied the bladder in a normal manner.

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* Read before the Section on Genito-Urinary Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Von Zeissl: Ueber die entnervente Blase, Wien. klin. Wchnschr., 1896, ix, 394.

Goltz and Ewald[2] removed the sacrolumbar cord and part of the dorsal cord in dogs and after a short time they found that the bladder emptied itself regularly at definite intervals.

In 1901, Muller,[3] from his observations and experiments, arrived at the conclusion that the reflex centers of urination are not situated in the spinal cord at all, but are exclusively placed in the sympathetic ganglia. Muller extirpated the cord in four dogs, and according to him, after a few weeks the bladder showed automatic functioning, without leakage in the interval between voidings. He ascribed to the spinal cord only trophic centers.

The new idea, as brought out by Muller, seemed to completely overthrow the classical views as to the physiology of the conus terminalis, and his views have been accepted by a large number of observers, while others, though admitting the existence of sympathetic centers, have superimposed on them the spinal center. It is still a difference of opinion, among this latter group, as to whether the sympathetic centers are capable of carrying on normal reflex vesical function after destruction of the conus terminalis or cauda equina.

Van Gehuchten considers that the sympathetic centers can functionate independently of the cerebrospinal centers.

Oppenheim, on the other hand, claims that the reestablishment of the vesical rectal function by the sympathetic centers takes place in a wholly imperfect manner.

The researches of Roussy and Rossi[4] on monkeys and dogs to determine the location of the bladder center and the effect of various lesions of the conus terminalis on the bladder function, are most interesting and convincing. In a certain number of animals they completely removed the conus terminalis or divided all the nerves of the cauda equina.

In another series they divided the spinal cord above the conus. In animals in which they destroyed the conus terminalis, or divided the cauda equina, there was complete paralysis of the bladder and its sphincters. Urine leaked from the bladder, drop by drop, as it entered it, or there were passages of small quantities coincident with movements of the animal, such as barking, etc. So that in these animals there was a picture of the atonic bladder, and this persisted during the life of the animals, many of which were kept alive for several months.

There was no such resuming of the bladder function as had been described by those who claimed the location of the bladder center to be outside of the spinal cord.

In those animals in which the cord was divided above the conus there was at first, for about three days, complete retention of urine. After this urination took place during the whole life of the animal in streams of urine with definite intervals without, as a rule, loss of urine in the interval.

The bladder resumed a reflex periodic emptying. They, therefore, concluded that the so-called sympathetic centers are utterly incapable of resuming, in anything like a normal manner, the function of the bladder when these centers are isolated from the spinal cord, and that the true center of urination lies within the conus terminalis.

They do not deny, however, the existence of extraspinal centers or the existence of centers within the bladder wall itself. But it would seem that they did definitely establish that these centers cannot carry on vesical function independent of the spinal cord.

The course of the peripheral nerves has been worked out by a large number of anatomists and physiologists, and the essential facts are now well established. In general, motor fibers are found in the second and third sacral roots and in the nervus erigens. The fibers of the sympathetic group are carried regularly in the third, fourth and fifth lumbar roots. These fibers pass through the sympathetic chain by a varying number of strands to the inferior mesenteric ganglion, and from this ganglion the hypogastric nerves arise.

The hypogastric nerves carry the impulse to the hypogastric plexus, which is formed by a union of the hypogastric nerves with branches of the nervus erigens.

From the hypogastric plexus terminal branches are distributed to the bladder.

It has been thought by certain observers that they had demonstrated vesicomotor fiber in the sympathetic other than those carried by the hypogastric nerves.

Stewart,[5] however, was unable to confirm their findings, in that when he sectioned the hypogastric nerves, leaving only the sacral paths open, and then subsequently cut the sacrospinal nerves, stimulation of the cord in every instance failed to produce bladder contraction.

The course of the sensory nerves has been somewhat more difficult to determine, inasmuch as stimulation of almost any sensory nerve of the body will produce a reflex contraction of the bladder.

Certain points, however, have been well established. It is definite that the sacral nerves contain sensory fibers from the bladder, which, when stimulated, produce a reflex through the cord and the sacral nerves.

These sacral nerve sensory fibers are part of an arc which is limited to the sacral nerve-cord reflex, inasmuch as they are not capable of exciting a reflex contraction of the bladder through the hypogastric nerves.

It has also been shown that the hypogastric nerves contain bladder sensory nerves. These fibers when stimulated produce a reflex contraction of the bladder, but this reflex is through the inferior mesenteric ganglion, for it takes place even though the ganglion be entirely isolated from the cord. This reflex, however, has been considered by Langley a pseudoreflex or axon reflex.

Griffiths[6] has described a third reflex occurring through the ganglion cells of the hypogastric plexus, and lastly, as pointed out above, some have maintained the existence of intravesical centers which functionate in spite of the isolation of the bladder from its spinal and sympathetic connections.

The exact function of the hypogastric nerves and of the sacral nerves is in doubt.

Von Zeissl,[7] from his investigations, concludes that the bladder conforms to the law of crossed innervation. The nervus erigens is motor for the body and inhibitory for the sphincter, while the hypogastric nerves are motor for the sphincter and inhibitory for the body, or as Strominger[8] puts it, the lumbar center retains the urine while the sacral center expels it. This view is not conformed to by all observers; thus, Louget considers that the sacral nerves control the sphincter while the sympathetic nerves control the body.

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[2] Goltz and Ewald: Arch. f. d. ges. Physiol., viii, ix, lxiii.

[3] Muller: Ztschr. f. Nervenh., xxi, Parts 1 and 2.

[4] Roussy and Rossi: Troubles de la miction, et de la défécation consécutifs aux lésions expérimentales du cone terminal ou de la queue du cheval. Cong. internat. de méd., Compt. rend., Budapest, (1909) 1910, Section xi, neuropatol., p. 438.

[5] Stewart: Am. Jour. Physiol., 1899, ii, 182.

[6] Griffiths: Jour. Anat. and Physiol., 1894-96, xxix, 61.

[7] Von Zeissl: Jour. d'urol. méd. et chir., 1893, p. 828; Arch. f. d. ges. Physiol., 1898, liii, 560.

Langley and Anderson[9] and Stewart[10] consider that stimulation of the hypogastric nerves differs only in degree from stimulation of the sacral nerves.

Langley[11] has more recently demonstrated the presence of inhibitory fibers in the sacral nerves.

Although stimulation of the hypogastric nerves will often produce contraction of the bladder, usually followed by a much greater dilatation, and stimulation of the sacral nerves usually produces a contraction of the bladder, stimulation of either nerve or of the cord will often produce a dilatation of a previously contracted bladder.

Two views have been held as to the manner in which the sensory nerves are stimulated to give a conscious sensation of the desire to urinate. According to Goltz[12] the distention of the bladder finally calls forth a reflex contraction which squeezes a few drops of urine into the posterior urethra, and the sensation of the desire to urinate arises from the stimulation of sensory nerves of the posterior urethra. A second theory is that the desire to urinate arises from stimulation of sensory nerves of the bladder itself from distention with urine. In support of Goltz's view has been set forth the fact that instrumental or chemical or inflammatory stimulation of the posterior urethra causes a desire to urinate. The fact, however, that this sensation may be thus produced is by no means proof that normally the desire to urinate arises from stimulation of nerves of the posterior urethra. This is perhaps a provision for the complete emptying of the urethra. Against Goltz's view and in favor of the view that the desire to urinate arises from stimulating of the sensory nerves of the bladder itself, is an overwhelming amount of evidence.

Thomson Walker[13] in observations on cases in which the whole posterior urethra had been removed by suprapubic prostatectomy found that there was no difference in these cases in the sensation of desire to urinate and concludes that the prostatic urethra is not concerned in, or is not necessary for, the initiation of natural urination. It might also be pointed out that in many cases after prostatectomy the posterior urethra becomes a part of the bladder and thus is almost constantly full of urine, and yet it is only when the bladder has reached a certain distention that the patient has a desire to urinate. This desire, so far as I have been able to make out, does not differ in any way from the normal sensation.

Mosso and Pellacani,[14] from experiments on women in measuring the volume of the bladder, came to the conclusion that the sensation of fulness and desire to urinate was caused by stimulation of the sensory nerves of the bladder.

Leedham-Green,[15] from roentgenograms of the bladder, failed to find evidence of the opaque medium in the posterior urethra.

It would seem, then, that Goltz's view is no longer tenable, and that the sensation of fulness of the bladder and the sensation of desire to urinate arises solely from stimulation of sensory nerves of the bladder itself and does not come about under normal conditions from stimulation of the nerves from the posterior urethra, although it is evident that stimulation of the posterior urethra does give the sensation of urinary pressure.

The question of the origin of the desire to urinate is closely allied with the function of the sphincter muscles of the bladder.

Henle, from his observations that fibers of the detrusor muscle were inserted between those of the internal sphincter, supposed that the internal sphincter was pulled open by a contraction of the detrusor muscle.

Zuckerkandl[16] has shown that most of the fibers of the detrusor muscle are inserted not between the fibers of the internal sphincter but are attached to the upper part of the prostate. Here, too, the internal sphincter would be regarded as a passive sphincter, as was regarded by Rosenthal[17] as far back as 1857, a view which has no support today.

As will be shown later, there can be no doubt that the external sphincter is capable of retaining urine in the bladder, not by an intrinsic elasticity, but by a tonic contraction, which is capable of being inhibited. There is no reason, therefore, to assume that the internal sphincter cannot and does not maintain bladder closure by tonic contraction.

The question of the function of the internal sphincter and of the sphincter urethrae has long been a debated one.

Guyon[18] and Finger[19] considered that the internal sphincter is too weak a muscle to play a great part at least in retaining urine in the bladder. They considered that when a moderate distention of the bladder had been reached, the internal sphincter is overcome and that a bladder neck is formed so that the prostatic urethra becomes part of the bladder cavity. Under moderate distention, then, the bladder is, according to this view, closed by the internal sphincter, but when fully distended the compressor urethrae muscle maintains bladder closure.

This view, then, necessarily maintains the existence of the formation of a bladder neck in a fully distended bladder; and Finger attempted to prove that such was the case by passing a catheter and noting the distance to which it had been introduced before urine began to flow. When the bladder was moderately full, but the patient had no desire to urinate, it was necessary to pass the catheter from 1 to 1.5 cm. farther than when the bladder was fully distended, and there was a marked desire to urinate; but as Leedham-Green[20] points out, if the posterior urethra had become a part of the bladder the difference should not be so slight, but should amount to the length of the entire posterior urethra or about 4 cm.

Volcker and Lichtenberg,[21] by filling the bladder with collargol, demonstrated that the internal vesical sphincter is the sphincter that prevents the escape of fluid from the fully distended bladder. They never observed the formation of a bladder neck.

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[8] Strominger: Rev. clin. d'Urol., 1914, p. 385.
[9] Langley and Anderson: Jour. Physiol., 1895-1896, xix, 71.
[10] Stewart: Am. Jour. Physiol., 1899.
[11] Langley: Jour. Physiol., 1910, xl.
[12] Goltz: Arch. f. d. ges. Physiol., 1874, viii, 478.
[13] Walker, Thomson: Clin. Jour., xl, No. 17, p. 261.
[14] Mosso and Pellacani: Arch. ital. de. biol., 1882, p. 1.
[15] Leedham-Green: Brit. Med. Jour., 1906, ii, 297.
[16] Zuckerkandl: Eulenburg's Realenzyklopädie, Ed. 3, 1894, iii, 331.
[17] Rosenthal: Diss. Konigsberg, 1857.
[18] Guyon: Gaz. hebd. de. méd., 1884; Leçons clinique sur les maladies des voies urinaires, 1896.
[19] Finger: Allg. Wien. med. Ztschr., 1893; Die Blenorrhöe des sexual Organe, 1905.
[20] Leedham-Green: Brit. Med. Jour., 1906, ii, 297.
[21] Volcker and Lichtenberg: Die Gestalt der menschlichen Harnblase in Röntgenbilde, Muenchen. med. Wchnschr., 1905. Cystographie und Pyelographie, Beitr. z. klin. Chir., 1906-1907, lii.

To determine this point Leedham-Green injected the bladder of men and youths with a suspension of bismuth and then roentgenographed the pelvis. The observer states, "In every case, I found that whether the bladder was fully distended or not the outline of the organ was oval and not pear shaped, and the urethra was sharply cut off from the bladder without a suggestion of a bladder neck."

Barringer and MacKee,[22] Uhl and MacKinney,[23] and A. Hyman,[24] using practically the same method of filling the bladder with an opaque medium, have all reached the same conclusion, that under normal conditions the internal vesical sphincter maintains bladder closure, and without exception they have failed to demonstrate the formation of a bladder neck.

Physiologists have been somewhat loath to accept the view that the internal sphincter maintains bladder closure, as it would seem to present an example of volitional control of unstriped muscle. There is, however, an example of this in the accommodation muscle of the eye, and the striking example of volitional control of unstriped muscle has been reported by Maxwell[25] in which a young man had the power of voluntary erection of the hair. Another explanation has been offered for the apparent volitional control of unstriped muscle and that is, that it is a reflex voluntarily initiated.

Rehfisch,[26] to prove that the internal sphincter muscle is capable of voluntary contraction, filled a man's bladder and then introduced a catheter so that its opening lay in the posterior urethra through the external sphincter muscle. The man could discharge and retain his urine at request.

From my own observation on cases in which I have performed Young's perineal prostatectomy I am convinced that not only is the internal sphincter muscle capable of maintaining bladder closure independently of the external sphincter muscle, but that it is to all intents and purposes under volitional control.

I am also convinced that the external sphincter muscle can maintain bladder closure independently of the internal sphincter muscle and do so in a reflex manner. This operation provides wonderful opportunity for determining just this point, inasmuch as the opening for drainage from the urethra is between the internal sphincter muscle and compressor urethrae muscle.

In this operation a small slit-like incision is made in the membranous urethra after the compressor urethrae muscle, triangular ligament and transverse perineal muscles have been retracted forward. Enucleation is then carried out subvesically. We have then an opening in the urethra between the external and internal sphincter muscles with, in many cases, a perfectly intact vesical neck.

It is not at all uncommon to see the internal sphincter muscle within a few days regain its function and the patient retain urine in the bladder and volitionally expel it from the perineal wound. It is also possible for him to close the bladder after part of the urine has been passed.

It is evident that in these cases the bladder closure is carried out entirely by the internal sphincter muscle and that this muscle will act volitionally. In further support of the theory that the internal muscle is capable of maintaining bladder closure and is under volitional control, is the fact that incontinence of urine very rarely follows external urethrotomy for stricture with section or destruction of the external sphincter muscle, and the cases in which it does follow might be explained by destruction of the internal sphincter muscle by long distention with urine.

A question of very great importance to the genito-urinary surgeon is whether the compressor urethrae muscle can act in a reflex manner and maintain closure of the bladder independently of the internal sphincter muscle.

As has been shown by Zuckerkandl in cases of prostatic enlargement, due to adenomatous growths, the internal sphincter muscle is sometimes enormously dilated by the growing of the adenoma through it.

Thomson Walker[27] was perhaps, the first to point out that in many cases the internal sphincter muscle is destroyed or rendered permanently useless by this distention. He noted that in necropsy on patients dying after prostatectomy there was frequently a large cavity of bladder neck remaining.

Hyman,[28] and Wallace and Page,[29] by making roentgenographic pictures of the bladder after prostatectomy, conclusively demonstrate that in many cases the internal sphincter muscle is not only functionally useless, but that the posterior urethra forms a bladder neck and that closure of the bladder is at the point of the compressor urethrae muscle.

Again, observations which I have carried out on cases following Young's perineal prostatectomy seem to definitely establish this point. In some of the cases in which a large adenoma has been removed, urine is frequently passed through the perineal wound without interruption until this wound closes, when the patient has perfect control of urination. It might be assumed that, in the cases of enlarged prostate, the external sphincter muscle had assumed a function which it does not normally possess, that with destruction of the internal sphincter muscle and a disturbance of its function by the growth of adenoma throughout it, the external sphincter muscle had gradually taken on itself a reflex ability to maintain constant bladder closure.

I believe that this possibility can be definitely ruled out and that the following clinical observation is of interest in this connection.

A patient, aged 83, consulted me on account of not being able to urinate, and having to use a catheter. Examination showed a small fibrous prostate and cystoscopic examination showed a well-defined posterior bar. A Young's perineal prostatectomy was done and after removing the fibrous prostatic tissue I found that there was an extremely contracted vesical neck, which I dilated with glove stretchers. Five days later it was found that the obstruction had not been relieved and that the patient had retention of urine. I immediately did a Young's punch operation, introducing the instrument through the perineal wound. The vesical neck was freely divided. Following this, urine

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22. Barringer and MacKee: Radiographs of the Bladder and Bladder Neck, Tr. Am. Urol. Assn., 1912, p. 408.
23. Uhl and MacKinney: Observations upon the Mechanism of Urination, Urol. and Cutan. Rev. (Tech. Sup.), July, 1913.
24. Hyman: The Normal Bladder and Its Sphincters and the Changes Following Prostatectomy, Ann. Surg., April, 1914, p. 544.
25. Maxwell: Am. Jour. Physiol., 1902, vii, 369.
26. Rehfisch: Virchows Arch. f. path. Anat., cl, 125
27. Walker, Thomson: Brit. Med. Jour., October, 1905, p. 865.
28. Hyman: Ann. Surg., lix.
29. Wallace and Page: Brit. Med. Jour., Nov. 25, 1911, p. 1405.

drained without interruption through the perineal wound for about three weeks, when a catheter was passed into the bladder through the urethra, and the perineal wound closed that day. Two days later the catheter was removed and urination was found to be normal in every respect as had been expected. It is evident that in this case there was what might be called an internal sphincter incontinence, but that when the perineal wound closed the external sphincter was brought into play, giving the patient perfect urinary control.

It is to be noted also that the external sphincter muscle assumed this control without having to be educated to new conditions. In this connection it is also worthy of note that in a large number of cases in which Young has performed his punch operation, not a single case of incontinence of urine, for even the shortest time, has followed.

Chetwood's galvanocautery operation for stricture of the vesical neck has occasionally, in some hands, resulted in incontinence of urine. This is no fault of the operation itself, in so far as dividing the internal vesical sphincter is concerned, but undoubtedly has resulted from division of the compressor urethrae muscle when incising in the perineum on a sound in the urethra for the purpose of introducing the galvanocautery.

It is believed that if the instrument was introduced as Young's tractor is introduced after the triangular ligament had been retracted forward, incontinence of urine would never follow.

From roentgenograms and from observations on operative cases in which the external sphincter muscle has been excluded, there can be but little doubt that the normal internal sphincter muscle is thoroughly capable of maintaining bladder closure and that to all intents and purposes it is under volitional control. It is also certain that the external sphincter muscle (compressor urethrae muscle) is alone capable of maintaining bladder closure and of acting in a reflex manner.

It would not seem that the subject had been covered without saying something in regard to incontinence of urine following prostatectomy.

The operation of median perineal prostatectomy entirely disregards the physiology of the mechanism of urination and it does not seem remarkable that many cases of incontinence of urine have followed prostatectomy by this method. The only thing that prevents incontinence of urine following this operation is that by chance the internal sphincter muscle might regain its function following the removal of an enlarged prostate through it; or that, by chance, the external sphincter muscle might heal and be restored to function. This operation must not be confused with Young's perineal prostatectomy, an operation after which incontinence of urine should never follow, inasmuch as not only is the internal sphincter muscle preserved for whatever value it may possess, after having been distended by the prostatic adenoma, but that by going in between the transversus perinei muscles and the levator ani, retracting the triangular ligament forward, the external sphincter muscle is preserved.

In one of Young's early series of 540 perineal prostatectomies, he had three cases of incontinence of urine, and frankly states that two of these were due to getting in anterior to the triangular ligament.

In conclusion it might be said:

1. The bladder center is situated in the conus terminalis of the spinal cord.
2. The so-called sympathetic centers are incapable of carrying on, in anything like a normal manner, the mechanism of urination.
3. The desire to urinate arises from stimulation of the sensory nerves of the bladder and not from stimulation of the sensory nerves of the posterior urethra.
4. The internal sphincter muscle normally maintains bladder closure.
5. Although the internal sphincter muscle is plain muscle it is to all purposes under volitional control.
6. The external sphincter muscle is capable of maintaining bladder closure and does not have to be educated to perform this task.
7. Either the external or internal sphincter muscle can, if necessary, be destroyed without interfering with the function of retention of urine, *providing the remaining muscle is in a normal condition.*
8. Median perineal prostatectomy, inasmuch as in this operation the external sphincter muscle is divided and the internal sphincter muscle is liable to be rendered useless by the prostatic growth, is likely to result in incontinence of urine.

Incontinence of urine does not follow Young's perineal prostatectomy, in that in this operation the external sphincter muscle is preserved.

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ABSTRACT OF DISCUSSION

Dr. Martin Krotoszyner, San Francisco: Dr. Cecil's paper calls to mind the not very rare occurrence of urinary disturbances that are apparently located in the prostatic urethra, but which in reality are due to some lesion of the urinary center in the lumbar spine. These cases are characterized by difficulties of micturition simulating involvement of the prostate gland, and, as a rule, also demonstrate cystoscopic changes, like trabeculosis, generally seen in prostatism.

Dr. Frank Hinman, San Francisco: The contribution of Dr. Cecil is important from a surgical standpoint, as it emphasizes the interrelationship of the two sphincters. It is important, before an external urethrotomy, for instance, to know that the internal sphincter is intact, and one would, therefore, hesitate to perform an external urethrotomy on one who had previously had his prostate removed. I can testify to the conservative character of Young's perineal operation in an experience of twenty cases without one death or one case of complete incontinence. In several of these cases the internal sphincter was unquestionably inactive, so that continence was due to the preservation of the external sphincter. Incontinence is of two kinds, false and true. False incontinence has been attributed to inaction of the internal sphincter in which the posterior urethra becomes a part of the bladder. The incontinence expresses itself in an imperative desire to void without the ability apparently of waiting when this desire comes. True incontinence is a condition in which both sphincters are inactive.

Dr. Granville MacGowan, Los Angeles: I wish to say that I have never seen any incontinence of urine following a properly performed suprapubic prostatectomy. I have seen a number of cases following Young's operation, when not performed in a proper manner. This is a thoroughly scientific operation, but one which the ordinary surgeon is incapable of performing. That is the reason why so many cases of incontinence of urine follow the operation.

Dr. A. B. Cecil, Los Angeles: In looking over the literature for the last four or five years on the question of urinary control, I found that the whole physiology of the mechanism of urination was considered more or less a mystery, that incontinence of urine was something that might or might not happen following prostatectomy, and that when it did there was no explanation for it.

I wondered why it was that some operators had reported numerous cases of incontinence of urine following perineal prostatectomy, because I really never have seen but one case of incontinence of urine following Young's operation. The whole reason of this discrepancy was because the mechanism of urination was by some operators disregarded. If one carries out the procedure as advised by Alexander to divide freely the external sphincter muscle, we would surely expect to get a certain number of cases of incontinence of urine. From the very first Dr. Young in perineal prostatectomy preserved that muscle, and if we preserve the external sphincter muscle in these operations, incontinence of urine will not follow. There is no mystery about it.

DIAGNOSES AND CERTIFICATES OF DEATH

WITH ESPECIAL REFERENCE TO CANCER*

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The life of a health officer is often spared by certain phases of human frailty with a humorous side. Among the complaints which come over the wire to the health department of Buffalo are such as these: "My husband is a pest and I want him removed." (A nuisance, evidently, to be abated.) "I want someone to do my washing, I can't get around to it." "Please send someone to kill off the cockroaches in my house. They are so thick that yesterday they stopped the clock." Such breezes serve to cool the fevered brow of the registrar of vital statistics while he wrestles with the problem of translating death certificates into figures qualifying and summarizing human mortality. When the registrar finds "asthenia," "neurasthenia," "Christian Science" or "climacteric," seriously certified as cause of death and ventures a mild protest, he is usually bidden to write a better one if he knows of one. How vital are vital statistics need not be urged here at length. Let any skeptical practitioner simply ask himself what would become of the science of preventive medicine without the knowledge of the whereabouts and extent of preventable disease, and the answer must solve his doubt as well as remind him of an important duty toward humanity. The importance of studying this question of the correctness of statistical diagnosis is less aid to the clinician who carries through his case conscientiously than for the sake of vital statistics. You may name a condition anything, or as many things as you please at the bedside, provided you treat your patient wisely, but for the Bureau of Census the diagnosis can be but one thing, and that as near as careful reflection can arrive at the truth. Nevertheless a preeminent clinician may be so far from connecting cause with effect as to quote with assurance death rates weakened by his own carelessness or impatience in writing out a death certificate.

For some time, in pursuit of the reason for the real or phantom increase in the death rate for cancer, I have been increasingly impressed with the importance of the question, "What of the diagnosis?" Death rates by cause depend largely for their accuracy on the accuracy of the individual physician both in determining and in recording the cause of death. It follows that the figures are certain when the physician is certain, and contrariwise.

In certain causes of death, doubt as to relative frequency is within limits so narrow as to be negligible, for example, in all deaths due to violence. Next to violence come the contagious diseases like smallpox, whooping cough or scarlet fever. Their universally recognizable signs and symptoms and their contagious nature make their diagnosis and reporting practically certain. All deaths followed by necropsy are likewise accurately reported, but in the absence of universally performed necropsy are of value only in proportion to their number. The value of such accurate data alone more than compensates for the labor and expense of gathering all. Of most doubtful value is the summary of causes that arise from conditions that remain hidden within the body cavities without clinical laboratory confirmation or necropsy. The sources of error which tend to vitiate accuracy in the latter class of certificates are many. The important ones are obscurity of the disease, lack of time and opportunity for study of its course, the lack of acumen of the physician, his unwillingness to take pains with the death certificate, and finally the interpretation by the registrar of the physician's interpretation of the signs and symptoms. The literature on the subject of diagnosis, as such, is scanty. How often is the diagnosis right? Do mistakes of omission and commission counterbalance and give approximately correct results, or are the figures subject to false inflation and deflation as the result of fads or educational propaganda?

Cabot[1] made a serious attempt to contribute something on this theme. From the printed discussion of his paper we deduce perfunctory commendation by some who heard the paper and a sweeping denunciation of the work, by Dr. A. C. Croftan of Chicago in subsequent letters to The Journal. Dr. Cabot's statements have received further confirmation in a report out of Bellevue Hospital.[2] Ash[3] contributes data concerning mistaken diagnoses in tuberculosis, and Bissell and LeCount[4] have discussed the diagnosis of coma. Greenwood and Wood[5] also present a significant discussion concerning the mortality from cancer. As physicians it is one of our most common weaknesses, arising from the patient's abhorrence of perplexity, that we fear to face our own diagnoses save in the dark. With a necropsy in prospect, few of us care to commit ourselves to a concise cause of death as we inevitably must, on a death certificate.

It was with the hope of throwing some light on this subject that I undertook a perusal of all death certificates issued in Buffalo for the year 1914, and by way of comparison, for the year 1894. It was a tedious work though punctuated with lighter moments as previously mentioned. A word as to the average physician's average opportunity (reference to ability is studiously avoided) to make use of all the helps that modern medicine has to offer, will not be out of place. In 1914, in Buffalo, an average American city, of about half a million inhabitants, the deaths were about seven thousand. The births for the same year were about twelve thousand. Now of these twelve thousand births, five thousand were attended by midwives. These five thousand midwifery cases called for at least five thousand out of twelve thousand families in which medical practice in serious cases is conducted under the following regulations. First, no physician to be called until the patient can bear it no longer, usually at night; second, the physician is not to come again until called for; third, the physician's pay is inadequate so that he must in such cases make too many calls a day, to give each case attention that will stand scientific criticism. In 1914, some four hundred certificates were made by the medical examiner or city diagnostician on evidence obtained after death without necropsy in nontraumatic cases in which criminality was not suspected. I think it fair to assume that most deaths certified to under such circumstances render diagnoses so subject to error as to be mere guesswork. The large majority of these deaths were, for adults, some disease of the heart or blood vessels, for infants, malnutrition or convulsions. I am of the opinion that guessing is by no means confined to the above kinds of certificates, but accompanies other sources of error mentioned above and now to be considered. Table 1 gives the gross results of the examination of death certificates at their face value, comparing the year 1914 with the year 1894, to show what progress, if any, has been made.

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* The term cancer as used in this article includes all varieties of malignant neoplasm.

* From the State Institute for the Study of Malignant Disease.

[1] Cabot, Richard C.: Diagnostic Pitfalls Identified During a Study of Three Thousand Autopsies, The Journal A. M. A., Dec. 28, 1912, p. 2295.

[2] Clinical Diagnoses and Necropsy Findings in Bellevue, Miscellany, The Journal A. M. A., April 18, 1914, p. 1279. For further confirmation as regards cancer see Rep. Imperial Cancer Research Fund, London, 1905, No. 2, Part 1.

[3] Ash, J. E.: The Pathology of the Mistaken Diagnoses in a Hospital for Advanced Tuberculosis, The Journal A. M. A., Jan. 2, 1915, p. 11.

[4] Bissell, Wayne W., and LeCount, E. R.: A Consideration of the Relative Frequency of the Various Forms of Coma, The Journal A. M. A., March 27, 1915, p. 1041. Also, Why Physicians Err in Diagnosis, editorial, ibid., p. 1076.

[5] Greenwood and Wood: On Changes in the Recorded Mortality from Cancer, Proc. Roy. Soc. Med., 1914, vii, 119.

TABLE 1.—PROGRESS SHOWN IN BETTER PREPARATION OF DEATH REPORTS IN 1914 AS COMPARED WITH 1894

	Total Deaths	Given Cause Doubtful	Improperly Arranged or Worded	Conflict of Two or More Given Causes
1894	5,280	501	274	170
1914	7,040	277	639	480

TABLE 2.—CONTRADICTIONS NOTED IN VARIOUS DEATH CERTIFICATES

Cause	Contributory Condition	Comment
Uremic poisoning (duration twenty days)	Albuminuria (duration three days)	
Pernicious *anemia* (duration, three months) laborer, 43 yrs. old	....	Physician attended one day
Dilatation of heart (duration, one year)	....	*Physician* attended *one* day
Acute yellow atrophy (adult)	....	Duration seven months
Acute nephritis	....	Duration one year
Chronic endocarditis...	....	Duration *fifteen* years
Gastro-enteric catarrh (duration two mos.)	Influenza (duration fifteen days)	Woman, aged 22
Graves' disease	Ptomain poisoning and valvular heart disease	Believe contributory, here were signs of cause
Asthma of lungs......	Laborious work	Emphysema?
Chronic bronchitis (duration one year)	Pulmonary hemorrhage	Tuberculosis?
Hypertrophic cirrhosis of the liver (man aged 56)	Valvular heart disease, mitral (duration one year)	Chronic passive con*gestion?*

Consideration in detail of the headings, with examples given, will make clear the kind of certification it is intended to criticize or question. Table 2 shows examples from certificates (year 1914) containing various contradictions. Duration is inconsistent with disease or patient with disease, and in some few cases I know that the cause of death as stated was probably incorrect. Statements not essential to the point are omitted.

Examples of certificates improperly made out, for example, with transposed or conflicting causes or with a multiplicity of nonessential causes are given in Table 3. Remember that the registrar can send to the census but one cause of death per death, and consider these causes. Some of these examples come from the best equipped men in the city and from hospitals. They were transcribed without alteration.

TABLE 3.—EXAMPLES OF IMPROPERLY GIVEN CAUSES OF DEATH

Primary or Statistical Cause	Contributory Conditions
Aortic stenosis, aortic insufficiency, mitral stenosis, nephritis, ulcerative colon.	Cardiac dilatation, uremia.
Bronchopneumonia. heart disease — mitral, progressive muscular atrophy.	*Hemiplegia.*
Acute appendicitis, appendix abscess, subperitoneal abscess, volvulus.	Plastic peritonitis, acute suppurative peritonitis.
Alcohol poisoning and heart failure from *overstimulation from alcohol. Patient* had been drinking very heavily for last three weeks.	When not under alcohol patient was in good health.

A common practice is to transpose, that is, give the contributory condition for the primary cause of death, and vice versa. This error does not affect a diagnosis which in itself may be correct, but if, for instance, an adequate contributory condition is put down in place of an adequate primary cause and the two causes contributory and primary are transposed, the registrar may be justified in reporting for the census a contributory cause which is in fact erroneous. Many physicians are not yet clear on what is a primary and what a contributory cause. This is not always easy to state, but granted the distinction can be made, the primary is the statistical cause of death, namely, that which goes through to the census reports. With this in mind the diagnostician cannot write "starvation" in the space where "cancer of the esophagus" ought to be.

Words added to certificates which serve no useful purpose but only confuse are the usual terms deprecated in the physician's pocket reference of the international list of causes of death, such as: marasmus, exhaustion, asthenia, cachexia, inanition, general weakness, dentition, and so on. They usually signify uncertainty. Those certificates, otherwise correct, which use these terms of infants especially in prematurity, have not been considered, as they appear so frequently.

TABLE 4.—EXAMPLES OF TRANSPOSITION

Cause	Contributory Condition
Inanition-myocarditis	Cancer of the esophagus
Toxemia	Pulmonary tuberculosis
Edema of lungs	Cerebral syphilis
Bronchial pneumonia	Pertussis
Brain pressure	Cerebellar tumor

Examples of conflicting diagnoses may be given. When two or more separate adequate causes of death occur simultaneously in the same patient, as said before, only one may be chosen by the registrar. The insane asylums, for example, are a fruitful source of such conflict, for in most cases where insane patients die of a well-marked psychosis other important causes give way. The following examples were all taken from certificates.

Tuberculosis
Dementia praecox

Epilepsy
Nephritis

Scarlatina
Diphtheria

Cancer
General paresis

Nephritis
Diabetes
Syphilis

Intestinal obstruction
Pertussis

The overshadowing disease, usually that of longest duration, becomes the cause of death. The difficulty presents itself peculiarly well in the coincidence of intestinal obstruction and pertussis. Intestinal obstruction in this case considered clinically would, as the predominating cause of death, take precedence over pertussis. Statistically, however, it is vastly more important to the community to know that there has been another death from pertussis, and the case would probably be so recorded.

Now take the year 1894. Under doubtful causes, be it noted that many more certificates were doubted than in 1914, in the first place because certificates were accepted then that would now be sent back for correction. In most returned and corrected certificates of 1914 there is reason to presume that the diagnosis was not thereby rendered more correct, but simply more in outward conformity with the international list of causes. On the other hand, many oft-repeated diagnoses of 1894 reflect by contrast the advance in medical knowledge during twenty years. Typhoid pneumonia was still a common expression, usually meaning a rapidly fatal pneumonia accompanied by a condition of shock. Various "congestions" of brain, liver, lung, etc., were still in vogue. "Membranous croup" was accepted, though it was grouped with diphtheria in the final accounting; similarly "enteric fever" with typhoid. Some typical examples of doubtful diagnoses, written in 1894, may be noted.

TABLE 5.—EXAMPLES OF DOUBTFUL DIAGNOSES

Cause	Contributory Condition	Remarks
Typhoid fever (woman, aged 79)	....	Duration seven days
Typhoid fever (child, aged 5)	....	Duration two days
Apoplectic stroke......	Abscess of brain.....	Child 3 years old
Neuralgia of heart....	....	Child 6 years old
Chlorosis	....	Negress, aged 19
Severe nervous deviation due to changes of puberty	....	Girl, aged 14

An interesting example is the following diagnosis after necropsy in which the cause would today doubtless have been ascribed to a stone in the ampulla of Vater.

Cause	Contributory Condition	Remarks
Hepatitis, perihepatitis, cholecystitis, enteritis (small intestine) (localized peritonitis), pancreatitis, pancreatic hemorrhage	Gastralgia and vomiting, collapse from shock	Woman, aged 62. Necropsy performed

There were instances in both years when the physician expressed on the certificate doubt of his own diagnosis. And yet, perforce, no such doubt was expressed in the census unless the case was classified among the "doubtful causes," which was not done unless the cause given was in itself doubtful. As may be supposed, the average faulty diagnoses were much more obviously and frequently incorrect in 1894 than in 1914. Conflicting causes, on the other hand, were far less frequent in 1894. The reason for this is to be found in an off-hand certainty which pervaded these earlier documents. Usually no duration was given. A physician took his duty much more lightly and the certificates were generally made out with far less care. As to improper certificates, the great increase in their number in 1914 was due to the overanxiety to be correct. The certifying physician nowadays feels that one cause may not stand alone, it must be plentifully characterized and fortified with contributory features which would make the dénouement appear inevitable, in order to avoid any dispute with the registrar. It is now, therefore, more often than ever the task of the registrar to choose from a number of causes that which seems the most likely.

Now taking only such as show striking differences, let us compare some given diseases in frequency of diagnosis. This with the idea of gaining an impression, more cannot be proved, whether diagnosis is in all things vastly better or whether it is so of certain diseases only while other increases or losses come of insistence that the certificate shall look more truthful whether it be so or not.

TABLE 6.—INCREASED OCCURRENCE OF DISEASE AS SHOWN IN DIAGNOSIS

Syphilis	1894	1914
Adult	12	32
Congenital	14	88
Congenital (subdivided)		
In X, infant asylum..........	1	54
In rest of city..................	13	34

In Table 6 the first and last line of figures might represent the normal increase proportionate to population. The second and third lines, however, show an enormous increase, and this is found to be due to a great number of diagnoses coming from one institution, probably indicating better diagnoses in that institution, whereas much infantile syphilis occurring elsewhere is lost under other headings.

Table 7 indicates a striking increase in a more definite as against a sharp decrease in a less definite diagnosis of the same character. This change is presumably one of the effects of insistence on more definite terminology.

TABLE 7.—INCREASE DUE TO MORE DEFINITE DIAGNOSES

	1894	1914
Apoplexy	112	216
Paralyses (not paresis)...............	57	21

A search was made for instances of an increase, due with the least possible doubt to improved knowledge. The first column in Table 8 gives the actual number of certified deaths of 1894 due to the disease chosen, then the number of cases interpreted from certificates of the same year as probably due to the disease, but otherwise stated. In the last column are the official totals for 1914. The "possibles" for 1914 were insignificant in number.

Note in Table 8 that in 1 and 2 the first two figures added give an approximately normal increase. In 3 the excess increase may be partly accounted for by postoperative deaths. In 4 the signs could not be read into a death certificate, being dependent on a blood count.

TABLE 8.—INCREASE DUE TO IMPROVED DIAGNOSES

	1894 Actual	1894 Possible	1914
1. Appendicitis	15	25	77
2. Prostatic disease (not cancer)	4	11	22
3. Exophthalmic goiter	0	2	17
4. Leukemia	2	0	13

Table 9 gives a comparison showing changes due in part to suppression of the really justifiable diagnosis of "old age." This term may be a refuge of ignorance or one under which to group the aged dead when time or opportunity is lacking to make out more definitely the terminal disease. Many physicians who would formerly have written "old age," "heart failure," "gastritis," "exhaustion," "dropsy," or what not, will now write arteriosclerosis, myocarditis, or nephritis, either together or separately and probably in many cases by reason of circumstances previously enumerated get no nearer the truth.

Table 10 shows that the disproportionate increase in violent deaths was due to insistence on supervision by a medical examiner in all cases in which there was history of trauma leading to the terminal illness, whether or not death was the immediate outcome.

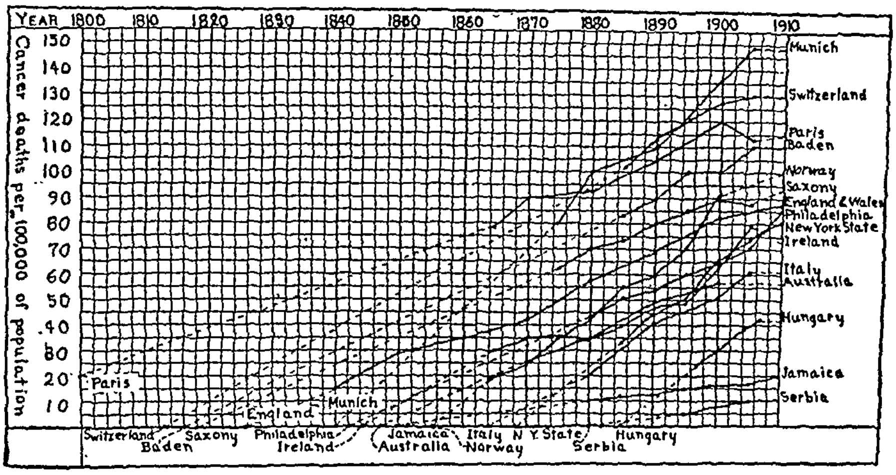

Fig. 1.—Cancer deaths per hundred thousand of population.

The diagnosis, chronic nephritis, as indicated in Table 11, is increased not alone by any marked change in prevalence of the disease, but partly by the fact that in a certain number of old people it constituted the "last straw" or terminal breakdown. To mix such deaths with those of children or adults taken out of vigorous life by Bright's disease is confusion. In the case of senile persons with a late nephritis, it had better have been set down that they died of senility than to have added the terminal disabling of any given organ to the category of important causes of death. Hence, to compare today's death rate for chronic nephritis with that of twenty years ago, without due regard for change in the character of certification, is fatuous.

TABLE 9.—COMPARISON SHOWING DROP IN REPORTED CAUSE OF DEATH AS DUE TO "OLD AGE"

	1894	1914
Arteriosclerosis	1	392
Old age	189	44

It is therefore incorrect to expect from the decrease in the diagnosis "old age" the chief source for the increase in cancer.

A similar source of error exists at the other extreme of life. As in senility old age is the important factor, so here it is infancy itself. From the clinician's point of view it was all important that the dead infant was fed on pickles and coffee. From the statistician's point of view the important factor was the infancy, because later in life pickles and coffee have little or no particular etiologic significance. Wherefore infantile malnutrition and *malassimilation*, as the case may be, should have just the same repute in a statistical diagnosis as senility. In such cases the clinician should not be made to feel forced, in the face of a clinical uncertainty, to find a point in the respiratory, circulatory or gastro-intestinal tract on which to hang his diagnosis. For these reasons the mortality figures of forms of death common in infancy, save still birth and the contagious diseases, are of little value in establishing the death rate for any given disease.

TABLE 10.—INFLUENCE ON REPORTS OF SUPERVISION BY MEDICAL EXAMINER

	1894	1914
Certificates made by official diagnostician or medical examiner	140	1,111
Total violence	240	444
Trauma due to fall	18	100

Now to my main purpose, namely, to consider the cancer diagnosis as a diagnosis, and how it may be affected by factors other than the true or actual death rate for cancer. To begin with, there is no doubt that, whatever the cause, the cancer death rate curve shows throughout the world a steadfast and rapid rise unlike that due to any other cause, save, in a minor degree, diabetes. Figure 1 will show this graphically. This chart will also indicate certain startling conclusions.

If the death curves run upward at the present rate, in a short time, say another generation, cancer will far outstrip other causes of death in persons of the cancer age. That this forecast is fallacious can be demonstrated with equal propriety by reversing the process, running the curve backward, as is done in the chart

TABLE 11.—APPARENT INCREASE IN DEATHS FROM NEPHRITIS AND DISEASES OF CIRCULATORY SYSTEM

	1894	1914
Arteriosclerosis	1	392
Myocarditis, fatty heart and cardiac paralysis (*in persons over 60*)	30	*
Nephritis, chronic (in persons over 60)	45	250
Total circulatory	344	1,117

* Now included under organic diseases of heart.

by means of dotted lines. The cast backward at the same average rate will seem to show that previous to 1800 there was practically no cancer worthy of mention anywhere on earth, and that our own state of New York had less than 1 cancer death per 100,000 of population previous to 1865. This would give for that year about 40 deaths for the state, due to cancer! The only country showing a sharp deviation from this curiously steady upward slant is Ireland, which difference may be explained by the obvious reason of the unparalleled depletion in a short time of its adult population by emigration. Another striking diagram is that giving four causes of death for the state from 1885 to 1912, inclusive (Fig. 2).

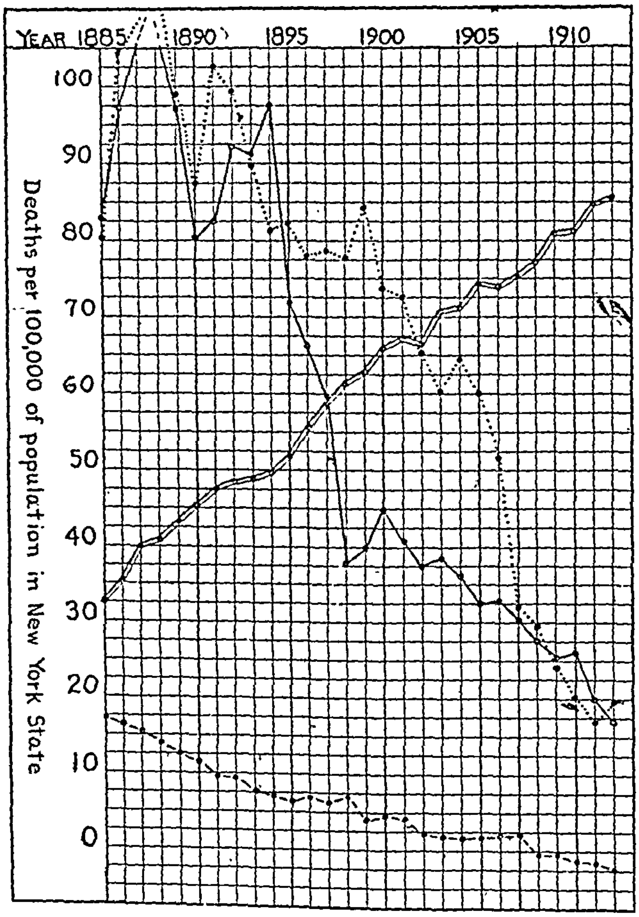

Fig. 2.—Deaths per hundred thousand of population in New York State: double line, cancer; dotted line, old age; solid line, diphtheria; line of dashes, malaria.

"Old age" is a diagnosis which has been during this given period sharply on the decline, not because of any sharp decrease in the relative incidence of old age, but almost wholly because of suppression of the term in the interest of supposedly greater accuracy of statistics.

"Diphtheria" is a diagnosis which has dropped *pari passu* with "old age," for an entirely different reason, namely, because of an actual decline in the number of deaths due to this disease in the face of methods of diagnosis which have shown it to be far more widespread than was formerly supposed. In 1894 there were made in the whole year at Buffalo 147 bacteriologic examinations for diphtheria; in 1914 as many every three days.

Diagnoses of malaria diminished, due both to improvement in diagnosis and in the incidence of the disease, certainly more by the first than by the second reason. In other words, examination of the blood has done more to diminish deaths due to this disease in New York by proving its rarity than has the extermination of the mosquito, though there was undoubtedly more of it in the state at one time than at present. So far as is known it was always the tertian form, a variety not serious in itself and most easily controlled by quinin. Fatal cases that occur in this state nowadays can be only in patients brought up from the tropics to die. Death due to locally acquired malaria belongs to the anomalies and curiosities of medicine.

Cancer is still in doubt.

It is a strange coincidence that the diphtheria and old age curves should be so alike, though produced by such fundamentally different causes. It appears, therefore, that two diseases may seem to diminish in a parallel from wholly different causes. It follows that the increasing curve of cancer may be due to any one or a variety of causes.

In general, cancer, as indicated by malaria, old age and diphtheria, may increase from four causes: (1) forcing the diagnosis to avoid controversy or as result of popular or professional cancer campaigns; (2) improved diagnosis and more frequent disclosure of the disease; (3) actual increase in the incidence of the disease; (4) age and sex constitution, reference to which is omitted as outside of the scope of this article. According to Table 12 let us consider what a comparison of cancer death certificates in Buffalo in 1894 and 1914 might indicate.

The cancer increase is certainly not due to an exchange with old age because, as shown previously, old age has become scattered under various headings, principally arteriosclerosis, organic heart disease, and nephritis. It is probably not due alone to forcing, because a doubtful condition in a person of the cancer age may be given any one of several names conforming with terminal symptoms. The figures, however, appear to countenance the idea that a considerable part of the increase is due to forced diagnosis. This is hinted at by the decided increase over the natural growth of population in the number of doubtful cancer certifi-

TABLE 12.—APPARENT INCREASE IN DEATHS FROM CANCER

	1894		1914	
	Total	Ratio	Total	Ratio
Population	300,000	1.	454,122	1.5
Total deaths	5,280	1.	7,040	1.25
Total cancer deaths	164	1.	428	2.6
External cancer	39	1.	82	2.1
Internal cancer	125	1.	346	2.77
Certified cancer, was probably not	13	1.	36	2.77
Certified something else; was probably cancer	40	1.	58	1.45

cates, that is as 13:36, or 1:2.77, which approximates the increase for internal cancer. Furthermore, certificates not for cancer, but which might on their face value have been cancer (1:1.45) take a place between the increase of population (1:1.5) and that of the total deaths (1:1.25). Examples of certificates giving cancer as cause of death which seemed likely not to have been cancer at all are given in Table 13.

TABLE 13.—EXAMPLES OF POSSIBLE ERRONEOUS DIAGNOSIS OF CANCER

	Cause	Contributory Condition	Remarks
1894	Intestinal cancer, woman aged 38		Duration four yrs. No hint of operation or necropsy*
	Cancer of stomach, man aged 64		Duration one and one-half yrs. No necropsy or operation. Attended for two weeks
1914	Cancer of intestines, boy aged 10		No operation or necropsy noted
	Infection of gallbladder, chronic ulceration of intestines, malignant degeneration head of colon with obstruction	Chronic malarial toxemia dysentery	Man, aged 36. No operation or necropsy recorded

* Death in a hospital was taken as presumptive evidence of a correct diagnosis.

In Table 14 are examples of certificates giving some cause of death not cancer, which it seemed might easily have been cancer.

Improved diagnosis as a factor in the increase is indicated by a markedly greater increase under the head "internal" as opposed to "external" cancer. The dividing line between external and internal cancer was arbitrarily made, by including as external those cancers which might have been discovered by the patient as distinguished from those discoverable as a rule only by complex methods, operations or necropsy. The increase in the population is represented by the figures 1:1.5, the increase in external cancer by the figures 1:2.1, and the increase in internal cancer by the figures 1:2.77.

TABLE 14.—PROBABLE DEATHS FROM CANCER NOT SO REPORTED

	Cause	Contributory Condition	Remarks
1894	Marasmus, malnutrition (duration four months)	Metritis, inflammation of stomach and esophagus	Woman, aged 44
	Inanition	Stricture of pylorus peptic ulcer	Man, aged 50
1914	Influenza, myocardial degeneration and dilation	Stricture of the esophagus, marasmus (two years' duration)	Man, aged 62
	Pernicious anemia (duration six months)	Rectal hemorrhage (duration one month)	Woman, aged 54

Actual increase in cancer, if any, must therefore share the statistical increase with the two other causes of increase. The numerical importance of these two other causes cannot be accurately determined by any such crude methods as the inspection of death certificates, but their influence is indicated not only by the figures quoted before, but also by impressions gathered from their perusal. These impressions cannot be set down in type, as they are derived from acquaintance with the certifying physician, or the death to which he has certified.

The studies of Cabot and others referred to in the beginning indicate substantial errors in general conclusions based on a large increase in cancer. However, they go no further than that we are not justified in taking the figures at their face value, but must allow for a margin of error of from 10 to 90 per cent. according to the difficulty of the case. This paper serves to emphasize that over and above diagnostic differences and errors, the limits of accuracy are still broader and more uncertain when the death certificate, even with due reference to age conditions, is called on to prove anything. These considerations led me to the following conclusions:

1. The majority of all deaths take place under circumstances that make accurate diagnosis improbable or impossible, wherefore death certificates are, in the majority, of doubtful accuracy. The sources of error are of a nature that tends to increase the apparent cancer death rate.

2. Deaths certified as due to (a) contagious or epidemic diseases, (b) violence, (c) causes verified by necropsy or operation, may be set down as the most comprehensive and accurate: all other causes are proportionately subject to inflation or diminution due to influences apart from the actual incidence of a given disease.

3. To give more accurate results within the limitations of error, the final classification of disease for the census should be modified by further study. To separate conclusive from fallacious causes there should be a large place (a) for deaths, of themselves uncertain in character, for example, nonviolent deaths certified by medical examiners without previous observation; (b) for all deaths of infants under 2 years of age and of old persons over 70 years of age in whom infantile debility or senility is a predominant condition; (c) all unknown causes should be frankly certified as unknown, for example, as cerebral, thoracic or abdominal unknown. Certificates of this kind would be naturally diminished in time by improved knowledge and should not be curtailed or abolished by arbitrary insistence on the giving of a "satisfactory" cause.

4. Death rates for disease can be made accurate only by universal necropsy. As a preliminary measure to introduce universal necropsy the law, as regards necropsy, should be made permissive, in order that a necropsy might be performed save when the deceased or nearest relative expressly prohibits it. This measure would tend gradually to break down useless prejudice partly sustained by the present law, which pro-

vides that the nearest of kin shall expressly and in writing consign the deceased to the diagnostic dissecting table. Necropsy should be a privilege of humanity for the living, not a penalty of the notable or notorious dead.[6]

5. If there is anything to be gained by the study of cancer statistics of this country in their present condition as regards cancer increase, it is rather in figures from small well-ordered communities over many years, where the figures may be controlled on the spot, than in taking broadly summarized figures of the general census for cities, counties and states.

113 High Street.

SUPERNUMERARY KIDNEY

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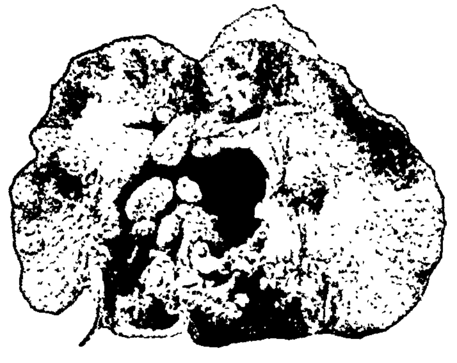
Cases of true supernumerary kidney may be considered one of the rarest of all pathologic renal conditions. A very interesting and brief reference to this subject was given by Voigtel[1] in 1805. He mentions cases reported by Blassius, Cruveilhier, Dupuytren, Eustachius, Gavard, Hyrtl and Haller. Voigtel, who reported the presence of four kidneys, also mentions a few writers, namely, Bottalus, Dellstang, Gemma and Schenk, who reported the presence of four kidneys.

The occurrence of accessory kidneys is not limited to man. Von Hansemann[2] found an accessory kidney in a pig, and Pieth[3] demonstrated the presence of a third kidney in a cow. This kidney was separate from the two ordinary kidneys, which were normal in position and structure.

Supernumerary kidney must be differentiated from cases of double kidneys. This form of anomaly is also very rare, but it is found more frequently than are cases of accessory kidneys, so that one may consider the latter as being relatively more common than the former. Failure clearly to differentiate between these two conditions is apt to occur when part of the double kidney has undergone some pathologic change. This oversight has occurred in some of the publications in which cases of undoubted double kidney are reported as supernumerary kidney. Suter,[4] in a recent article on this subject, tabulates nineteen cases. Several of these are not above reproach and undoubtedly should be reported as cases of double kidney. It may be questioned whether both of Suter's cases should be considered as true supernumerary kidneys.



Supernumerary kidney which contained thirteen stones. This kidney was not attached to either of the other two kidneys, and had its own blood supply.

I wish to report the following case:

Mrs. W., aged 27, complained of recurring attacks of kidney-stone colic. The present illness began two years ago, at which time the patient had her first seizure. This began very suddenly with a severe pain in the left kidney region, which lasted several hours, and was preceded by a chill and fever. Three weeks later she had another attack, and these have since recurred about every three weeks, usually persisting for a day; one lasted three days. During the first attacks she did not observe the urine, but later, after each attack, the patient always found stones, and the urine was tinged with blood.

During the last month or two, she states, her urine was very turbid. The attacks were always associated with nausea and vomiting. There was some frequency of urination, the patient being obliged to void every two hours during the day, and several times during the night. There was more or less pain and burning on urination. There is no history of previous illnesses. Menstruation is regular, of the twenty-four day type. The bowels show a tendency to constipation since the onset of her illness.

Physical Examination.—The patient is a well-developed, well-nourished woman. The pupils react to light and accommodation. The thyroid gland is enlarged, both lateral lobes and isthmus; there are no symptoms of Graves' disease.

The recti muscles are slightly separated. The left kidney is palpable. Deep pressure over the right kidney causes pain and muscular spasm, the tenderness being more marked posteriorly.

Examination of the thorax was negative as regards heart and lungs. The examination of the extremities was also negative in result.

Cystoscopic Examination.—June 8, 1914: Bladder negative except for the presence of small adherent whitish flakes of mucopus. A small polyp was seen on the internal urethral orifice. Double ureteral catheterization was easy.

URINARY ANALYSIS

Right Kidney

Appearance	Clear
Albumin	Trace
Sugar	0
Microscopic Examination	Negative
Cultures	Sterile

Left Kidney

Appearance	Turbid with flakes of pus
Albumin	+
Sugar	0
Microscopic examination	Pus in large amount
Cultures	Sterile

Result of Phenolsulphonephthalein Test, Intravenous Administration, Thirty Minutes' Collection

	Right Kidney	Left Kidney
First fifteen minutes	17.5 per cent.	11 per cent.
Second 15 minutes	9 per cent.	8 per cent.
	26.5 per cent.	19 per cent.

Total output for thirty minutes, 45.5 per cent.

The blood examination showed leukocytes 7,900; hemoglobin (Dare) 73 per cent.; blood pressure 146.

Roentgen-Ray Examination.—In the region of the left kidney there were seen many more or less indistinct shadows. These shadows were very faint. The roentgenogram did not resemble that usually seen in cases of kidney stone. Because of these peculiar findings a possible diagnosis of incrustations of the renal pelvis was made.

It was decided to perform a pyelotomy and to curet the areas of incrustations and remove any calculi that might be present.

Operation.—June 10, 1914: The usual oblique incision was made. The kidney was exposed without any difficulty but it could not be delivered because of the extremely short pedicle. Numerous stones were palpated in the pelvis. Small depressed scars were seen on the surface. Pyelotomy could not be carried out because it was impossible to bring the kidney up far enough to expose the pelvis. After careful deliberation it was decided to remove the kidney, which was full of stones. The kidney, except that it was small, did not differ in appearance from any other kidney.

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[6] Wilson, L. B.: The Necropsy as a Public Service, The Journal A. M. A., May 8, 1915, p. 1563.

[1] Voigtel: Handb. d. path. Anat., 1805, p. 169.

[2] Von Hansemann: Berl. klin. Wchnschr., 1897, p. 81.

[3] Pieth: Jahresb. f. Urol., 1909, p. 419.

[4] Suter: Folia urol., August, 1913.

The wound area was thoroughly exposed with retractors before closing and a dark mass was seen in the depths of the wound. I attempted to remove this with my finger, thinking it was a blood cot. This small mass had a pedicle which was clamped, tied and cut. It proved to be a supernumerary kidney, which also was full of stones. This kidney had its own pelvis and its own blood supply. (See illustration.)

Cystoscopic Examination.—July 6, 1914: The bladder still shows a slight degree of cystitis. Both right and left ureters were negative. Only one ureteral orifice was seen on the left side. Examination of the urine still showed the presence of pus. This postoperative cystoscopic examination was made especially to determine whether or not there were three ureteral openings in the bladder.

From a careful study of the recorded cases, it is quite apparent that one of the greatest difficulties arises in making an accurate preoperative diagnosis. Calabrese[5] made a probable preoperative diagnosis of supernumerary kidney in his case, by palpation. Palpation is necessarily of limited value; and a positive diagnosis made from this alone seems to be quite an assumption. The presence of three ureteral orifices in the bladder is only of partial help, as this is not pathognomonic. Three ureteral orifices may be seen cystoscopically in cases of double ureter and double pelvis. As a matter of fact this aid was absent in the cases of Rustschinski,[6] von Hansemann, the case mentioned in the U. S. Marine Hospital reports,[7] Calabrese, Tonkow, and Isaya,[8] in which only two ureteral orifices were found in the bladder, the two ureters of the same side having fused outside of the bladder. This was exactly the condition in my case, the ureter from the accessory kidney fused with the ureter of the normal kidney on the same side, outside the bladder (see postoperative cystoscopy). Barlett[9] reported three ureteral openings in the bladder and Wedensky's[10] case was unique in that the ureter of the accessory kidney terminated in the prostatic urethra. So far as I know this is the only case in which the ureter of a supernumerary kidney so terminated.

It seems as though the diagnosis might be made in suspected cases by means of pyelography. Inasmuch as we know of the tendency of these ureters to unite outside the bladder, the ureteral catheters might be inserted only a few inches into each ureter and then the solution be allowed to find its way into each renal pelvis. The presence of three separate and distinct pelves in the roentgenogram might aid in establishing the diagnosis. (?)

It is perfectly obvious that the shadowgraph catheter would be of doubtful value in establishing a diagnosis in this group of cases.

The rare occurrence of this condition, the scarcity of case reports, and the lack of detail in reporting the cases, leaves much to be desired in our knowledge on this subject.

There was nothing in the history, cystoscopic examination or Roentgen-ray findings in this case to cause us to suspect the presence of this rare anomaly.

Of interest is the fact that, in four cases, this condition was found on the right side (Watson Cheyne,[11] Isaya, Tonkow and Wedensky). In eleven cases the condition was found on the left side (Barlett, Cobb and Giddings,[12] Calabrese, von Hansemann, Hyrtl,[13] Munro and Goddard,[14] Mills,[15] Newman,[16] U. S. Marine Hospital Service Reports, Rustschinski, and my case).

The kidney, in Mills' case, was discovered in the dissecting room. The cases reported by Wedensky, Rustschinski, von Hansemann, Bartlett and Newman are given in necropsy reports. Clinical cases were reported by Cobb and Giddings, Calabrese, Depage,[17] Isaya, Munro and Goddard, and Watson Cheyne.

Many of the cases reported do not contain definite statements regarding the pathologic condition which existed in the supernumerary kidney; the statement is simply made that an accessory kidney was found. My case is the only one in which calculi were reported present. It is, furthermore, the only one in which two of the three kidneys were the seat of the disease.

In Rustschinski's case, all three kidneys were the seat of foci of suppuration, and it is apparently the only case in which all three kidneys were diseased. In the remaining cases the pathologic conditions mentioned as found in the supernumerary kidney were: cystic changes (Wedensky), rudimentary pelvis (Mills), papillary cystadenoma (Cobb and Giddings), movable kidney (Watson Cheyne), pyelonephrosis (Munro and Goddard).

122 South Michigan Boulevard.

ACUTE ASCENDING HEMORRHAGIC MYELITIS *

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The title of this article is descriptive of a rare pathologic condition which has comparatively recently come under my observation. Its rarity is attested by the fact that in the literature very few cases can be discovered of this combination of acute inflammation of the spinal cord with overwhelming diffuse hemorrhages into the gray matter, and to somewhat less extent into the white matter.

It seems important to draw an analogy between this case and two other cases of acute ascending paralysis, also recently under observation.

The evidence tends to show that there are three clinical as well as pathologic types of acute ascending paralysis. My conception of the differentiation of the three will follow later.

In order to have the material before us, I shall at once describe this case of acute hemorrhagic myelitis, and later briefly the other two cases.

Case 1.—E. W., a girl of 20, about to graduate from a private school, gave the following history: Her parents are living and well. There are two other children, one well and the other nervous. No family disease is known.

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[5] Ca[illegible] Ann. d. mal. d. org. génito-urin., 1908, ii, 1841.
[6] Ru[illegible]ki: Quoted by Suter, Folia urol., August, 1913.
[7] Rep. [illegible] Marine Hosp. Service, 1885.
[8] Isaya[illegible]d. mal. d. org. génito-urin., 1911, p. 225.
[9] Barlett[illegible]et, London, Jan. 9, 1904.
[10] Wedens[illegible]lia urol., October, 1911.
[11] Watson [illegible] Lancet, London 1899, p. 218.
[12] Cobb and Giddings: Ann. Surg., 1911, liii, 367.
[13] Hyrtl: Quoted from Reinfelder, Inaug. Diss., Munich, 1905.
[14] Munro and Goddard: Am. Jour. Med. Sc., 1907, p. 398.
[15] Mills: Jour. Anat. and Physiol., 1911-1912, xlvi; ibid., xlvii, 313.
[16] Newman: Tr. Clin. Soc., 1898, xxxi, 131.
[17] Depage: Jour. de méd. et de chir. de Bruxelles, 1893.

* Read before the Section on Nervous and Mental Diseases at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

The patient was a "blue baby," and the blueness persisted throughout her life. She had been rather delicate, of a nervous type and had had to favor herself more than a normal child. She had done well in school, however, and up to five days ago appeared to be in her normal health. Five days ago she first noticed a numbness, accompanied by some weakness, in her left foot. The following day a similar condition arose in the right foot, and later this numbness and paralysis gradually crept up her body, so that on the third day the numbness extended as far as the chest and began to attack the left arm.

She was brought home at this time, and was attended by two physicians, who were undecided whether she was suffering from hysteria or from some spinal cord lesion.

On the next day she had for several hours very severe pains, starting apparently in the spinal region and extending down both legs, especially the left. About this time also, her right arm became involved, the neck became somewhat stiff and she was practically completely paralyzed, except for her head, though certain weak movements of the right hand were possible.

At this time, that is, on the fifth day, I saw her in consultation with Dr. Kendall Emerson, and made the diagnosis of acute ascending paralysis. The temperature at this time was 103. The whole body was a grayish blue. The finger tips were markedly clubbed. There was practically complete anesthesia and muscular paralysis below the neck. The patient was unable to control the bladder and rectum. On the left leg was a large burn, 6 inches across, of which she was not aware, produced the night before by a hot water bottle. The pupils were equal and reacted normally to light. The neck was only slightly rigid. The tongue was dry and coated. The heart was rapid, 120, but not markedly enlarged and no murmurs were heard. The patient was conscious and perfectly clear mentally. The speech was unaffected. The respiratory muscles were just becoming affected, deep respiration absent. No glands were palpable.

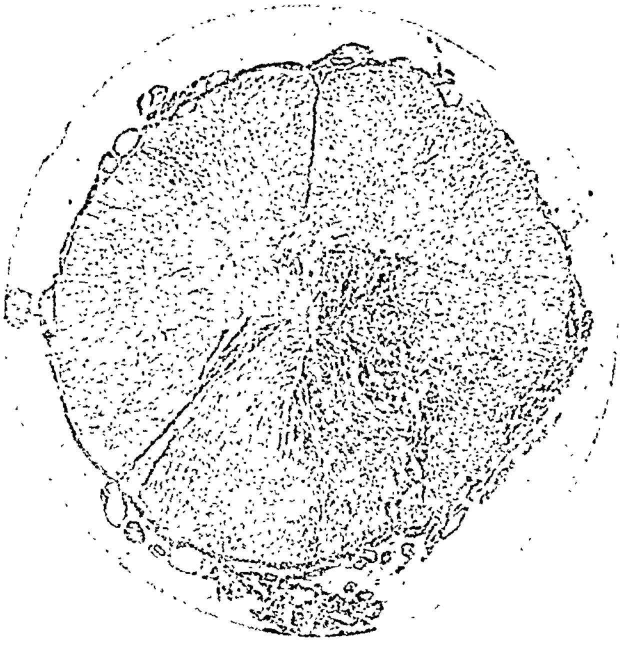

Fig. 1.—Case 1, E. W. Cord showing large area of hemorrhage in posterior horn.

I ordered immediate removal to Memorial Hospital, after first doing a lumbar puncture and withdrawing 15 c.c. of a somewhat turbid and markedly blood-stained fluid. The pressure of the fluid was somewhat above normal. The blood stain was evidently not due to trauma by the puncture, as all the fluid withdrawn was of the same nature. Subsequent examination of this fluid showed a marked excess of blood cells, an enormous excess of polynuclear white cells, some of them more or less disintegrated, and no bacteria. Cultures were taken from the fluid but no organisms could be grown. The globulin reaction was positive.

At the hospital the patient was made as comfortable as possible. She had no pain, but felt as if her body was heavy and she had an increasing sense of exhaustion. She was put on liquids and hexamethylenamin, 20 grains, every four hours.

Her entrance to the hospital was at 8 p. m., May 25, 1914. At that time her white blood count was 12,300; hemoglobin 80 per cent.

She did not sleep well that night on account of inability to move and a sense of weakness. Toward morning the respiration became more shallow and cyanosis increased. Suddenly at 9:45 a. m. respiration stopped practically without warning. A few moments later the heart beats ceased.

Permission was given for necropsy, which was performed by Dr. Kinnicutt at 1:30 p. m.

Anatomic Data.—Body of a well-developed young woman, markedly cyanosed.

Head: On section of the scalp there is a large amount of dark fluid blood. On removal of the skull-cap the longitudinal sinus is distended with dark fluid blood. The dura is not adherent, the meningeal vessels are injected, and the convolutions are somewhat flattened. On section of the brain: The ventricles contain no excess of fluid, but throughout the cerebral cortex are scattered numerous minute hemorrhagic areas.

Spinal Cord: The sections throughout its length show extensive areas of hemorrhage within the cord, especially into the gray matter, often entirely replacing the normal markings. There is no excess of spinal fluid and no evident induration around the meningeal covering.

Body: On section the subcutaneous fat is considerable in amount. The peritoneum is smooth and glistening. The appendix is normal. The lower border of the liver in the right mammary line is at the costal margin. The pleural cavities contain no free fluid. The lungs are salmon red in color and on section yield a large amount of pale, frothy fluid. The pericardium is normal. The heart is somewhat enlarged. On section the left ventricle wall is thickened. The papillary muscles are hypertrophied. The valves are normal. The foramen ovale is patent. The liver on section yields a large amount of dark fluid blood and shows "nutmeg" markings. The spleen is enlarged, firm, dark purple in color and on section yields a large amount of dark fluid blood. There is a small accessory spleen at its lower pole. The kidneys are enlarged. The capsules peel easily, leaving smooth surfaces. The abdominal organs otherwise are not remarkable.

Sections of the brain and spinal cord are placed in alcohol or 10 per cent. dilution of liquor formaldehydi for further examination. The bulk of the spinal cord is put into sterile glycerin for shipment to the Rockefeller Institute for Medical Research.

Microscopic Examination of the Brain and Cord: Paraffin Cresyl Violet Sections.—Cortex: Section 1: Precentral. The pia is of normal thickness. It contains small numbers of lymphocytes and numerous large endothelial cells, many of which are laden with blood pigment. Cortical lamination is normal and the nerve cells stain well. A mild satellite reaction is present in the deeper layers. Small amounts of green pigment are seen about some of the cortical capillaries, but otherwise the vessels are normal.

Cord: Section 1: About second segment (Fig. 1). Macroscopically, a large area of hemorrhage is seen, occupying the anterior and posterior horns of one side and extending anterolaterally to the periphery. Microscopically, there is found a disruption of the nerve tissue in the hemorrhagic area and a marked edema of that side of the cord. Smaller hemorrhages are scattered about the large focus. The reaction of the nerve cells varies. An occasional one is shrunken and angular, but the majority stain well, even those situated in the hemorrhagic area. There is no undue satellitosis. A heavy perivascular infiltrate of lymphocytes, together with a few polymorphonuclear leukocytes, is present. No plasma cells are seen. The vascular endothelium is not remarkable. Numerous glia cells with large vesicular nuclei and visible cytoplasm are present in both gray and white matter. In the central part of the hemorrhagic focus are large numbers of polymorphonuclear leukocytes and areas in which the tissue stains a dull, diffuse blue, suggesting necrosis. The opposite side of the cord shows a small area of hemorrhage, considerable edema of all the structures, and a mild lymphocytic perivascular exudate.

The pia is comparatively unaffected by the process, showing only occasional lymphocytes about the vessels.

Section 2: Lower cervical. Changes in the cord are similar to those in Section 1. There is a mild lymphocytic infiltration about the branch of the anterior spinal artery in the anterior fissure, and scattered lymphocytes among the anterior and posterior root bundles.

Section 3.—Lower dorsal. Very marked edema throughout the cord, which, with several large areas of hemorrhage, distorts the outline of the gray matter. Perivascular exudate as in Section 1. There are collections of lymphocytes, polymorphonuclears and large mononuclear cells in the pia about the points of exit of the anterior roots. There is no exudate, however, among the nerve bundles themselves.

Alzheimer's Lichtgrün Stain.—Cortex: Large granules staining with osmic acid are found rather abundantly in the cells in the perivascular spaces of the white matter, and to a small extent in the vascular endothelium of both cortex and white matter, and in a few nerve cells. No ameboid glia.

Lumbar Cord: Very heavy black deposits in the nerve sheaths everywhere in the white matter and in the nerve roots. Numerous glia cells with large vesicular nuclei and ameboid bodies are present in the white matter. These cells frequently contain vacuoles or black granules. The cord is infiltrated with hemorrhage.

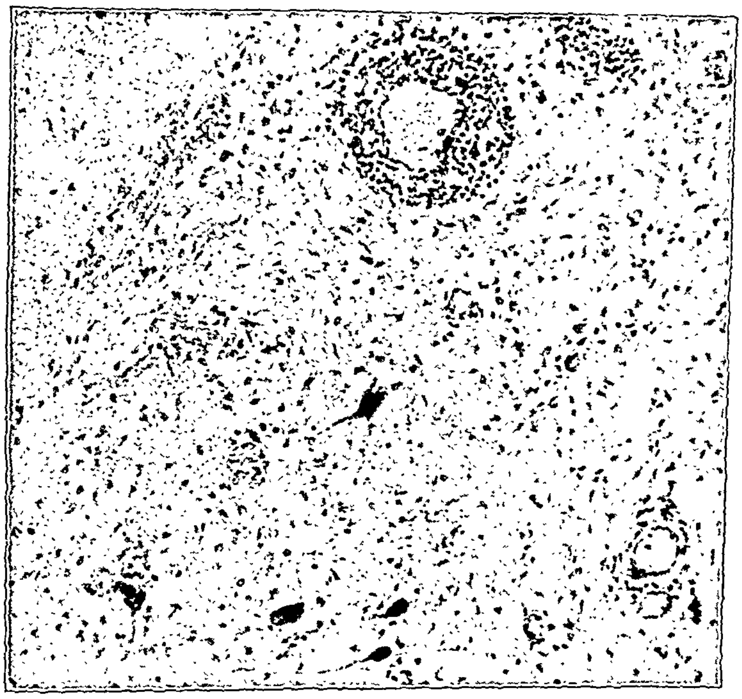

Fig. 2.—Case 1, E. W. Dorsal cord. An area from the anterior horn, showing lymphocytic perivascular infiltration. The nerve cells are intact.

Mallory's Phosphotungstic Acid Hematoxylin Stain. — No increase of fibrillar glia in cerebrum, cerebellum or cord. Examination of numerous cresyl-violet, thionin and Zenkereosin-methylene blue sections reveals no bacteria.

Summary.—An acute diffuse inflammation of the cord, characterized by extensive hemorrhage, heavy perivascular infiltration of lymphocytes, combined with smaller numbers of polymorphonuclear leukocytes, ameboid glia and fatty degeneration of the fibers in the cord and nerve roots. The nerve cells are in general well preserved, and there is no neurophagic activity. The centers of the large hemorrhagic foci show beginning necrosis with large numbers of polymorphonuclears.

The cortex shows a mild meningeal lymphocytic reaction, small deposits of lipoid in nerve cells and vascular endothelium, occasional perivascular lymphocytes and phagocytes, and in one section a marked satellite reaction with slight degenerative changes in the nerve cells.

As I intimated in the beginning, little success has been met in the search for cases like the one just reported. Of course a number of cases of anterior poliomyelitis have been reported with more or less hemorrhage into the gray matter, also many cases of more or less diffused myelitis, with hemorrhage. None of these, however, seem to correspond exactly to my case.

Wyss reported before the International Congress in 1898 a case of hemorrhagic myelitis and phlebothrombosis of the spinal cord, in a girl of 12 years. This process, however, was found to be dependent on a tumor of the cervical cord, and pathologic lesions did not extend above this area.

Warrington and Owen have since reported a case somewhat similar. The history is as follows:

> A man 41 years old. Illness began with chill, and three days later he had a temperature of 101. He then seemed to improve, but four days later he developed sensory and motor paralysis of both legs, with sphincter involvement. The paralysis ascended during the next four days until the respiratory center failed.
>
> At necropsy the cord at various levels showed masses of intraspinal hemorrhage, more severe in the dorsal region, and corresponding chiefly to the anterior spinal system of arteries. A distinctive feature was the great dilatation of the small vessels, in both gray and white matter. The pia also showed greatly distended vessels and cell extravasation. Under high power the vessels showed wall thickening and neighboring necrosis of tissue. The cornual cells and nerve fibers exhibited all degrees of degeneration when near the vascular disturbance. Beyond these zones the nerve structures were intact. The brain above the medulla was normal. No micro-organisms could be detected.

This case, though dissimilar, is more like Case 1 than any other I have found. By way of comparison, let us now consider Case 2.

Case 2.—E. C., a young man of 26, of previous good health, was occupied as a chemist in a rubber mill.

Three weeks before I saw him in consultation with Dr. Prouty of North Brookfield, he began to complain of headaches and feeling tired. No marked symptoms, however, developed until four days before, when the patient complained of slight numbness and weakness of both legs. This gradually became more marked, and three days later there was slight drooping of the left eyelid, with extension of the weakness to the thighs.

On physical examination, July 16, 1913, patient appeared fairly well nourished. Pupils reacted normally. There was slight impediment of speech and left facial paralysis. The knee jerks were absent, also the plantar and Achilles reflexes. Weakness of the legs was marked, but sensation was unimpaired except subjectively. Patient was sent to Memorial Hospital and lumbar puncture done at once.

Spinal fluid examination: Pressure normal, fluid clear, globulin positive, Fehling's reduced. Cell count 14, practically all lymphocytes.

The following day patient was unable to stand and paralysis was beginning to involve both arms. Two days later the muscles of the abdomen and chest as well became involved, causing more shallow respiration. The cranial nerves other than the seventh showed no definite involvement. The paralysis progressed, and the patient died of respiratory failure on July 26. The temperature had not reached 99 at any time and the pulse rate varied from 80 early in the illness to 120 toward the end. Urine was normal except for slightest traces of albumin.

Blood Examination: Hemoglobin, 90 per cent.; leukocytes, 11,100; erythrocytes, 5,628,000. Differential: Polymorphonuclears, 71 per cent.; lymphocytes, 21 per cent.; large mononuclears, 6 per cent.; mast cells, 1 per cent.; eosinophils, 1 per cent.

Necropsy.—By Dr. Hunt, three hours after patient's death. Nothing remarkable about the viscera of the chest and abdomen except that the distal part of the ileum was considerably injected and there appeared to be a general enlargement of the intestinal lymph nodes. Many of these nodes were the size of a cranberry bean and firm to pressure. The kidneys were slightly enlarged, but had normal markings and freely removable capsule.

The spleen was slightly enlarged and showed some signs of congestion. Cultures taken from the heart and subdural space failed to produce any organisms. On removal of the calvarium an excess of edema and considerable vascular congestion was noted in the meninges. The arachnoid was glistening and appeared somewhat less transparent than normal. The meninges of the cord likewise gave the appearance of congestion and edema.

On fresh section of the cord and brain no gross pathologic lesions were evident.

It was planned to inject emulsions of spinal cord from this case into monkeys to help establish the etiology, but, on account of the absence of the laboratory staff from two hospitals, it failed of accomplishment.

For lack of space, the microscopic findings are only summarized in this report.

Summary.—A widespread degenerative process in the nerve cells of the cerebrum, cerebellum, medulla and cord. The affected cells are frequently surrounded by others which appear normal, and no particular groups can be said to be peculiarly involved. There is a moderate satellite reaction, moderate perivascular lipoid deposits, and slight perivascular lymphocytosis in both pia and nerve tissue. The nerve roots, both cranial and spinal, show small lymphocytic deposits.

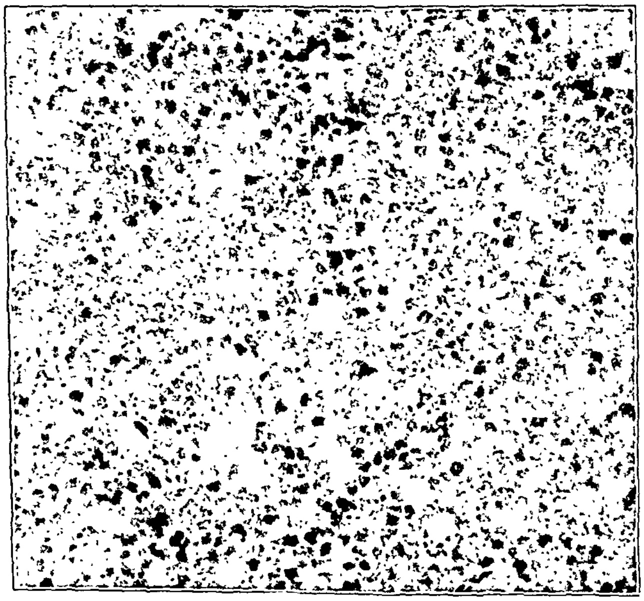

Fig. 3.—Case 1, E. W. Area of hemorrhage in the gray matter.

The pathologic picture is one which has been frequently described in cases of Landry's paralysis, that is, a widespread degeneration of the nerve cells with scanty perivascular exudate. The process in the present case is one which strikes the nerve cells differentially. Some fade out with, others without satellitosis. The picture is compatible with a purely toxic condition.

Further discussion of this case is postponed until after a brief summary of the following case.

Case 3.—A boy, 14 years old, was always well until Sept. 13, 1913, except for an accident to his head a year previous, at which time he received tetanus antitoxin. Two weeks previous to September 13, he had returned from a vacation at the shore in excellent health.

The early symptoms noted were headache and fever, which, on the afternoon of the 13th, reached 102.5. The headache, fever and malaise continued the next day, and during the night of the 14th paralysis of both legs developed. This paralysis gradually ascended during the next thirty hours until the thighs, abdomen and arms and respiratory muscles became in sequence involved. No pain was complained of. There was some paresthesia, but no actual anesthesia of the limbs. The deep reflexes of both legs and arms were absent. The paralysis was flaccid. Lumbar puncture was done by me at this time, September 16, on being called in by the family physician.

The spinal fluid was under moderate pressure, but was not turbid. The cell count was 68. Globulin was positive with both ammonium sulphate and Noguchi. Differential count (Alzheimer method): Lymphocytes, 0.83; endothelial cells, 0.12; polymorphonuclears, 0.5; plasma cells, 0.

Though the patient did not rally under treatment, he lived until 6 a. m., September 20, when both heart and respiration failed.

This case would be difficult to differentiate from the other two, without the aid of a spinal fluid examination, but with the differential cell count it must be put down as an anterior poliomyelitis (acute ascending type).

I regret that the family physician did not heed my request for a necropsy in this case.

The pathology of acute poliomyelitis being familiar to you, I am offering the following schematic differentiation of three types of acute ascending paralysis, as exemplified by the three cases above reported.

RELATION TO HEMATOMYELIA AND HEMORRHAGIC ENCEPHALITIS

While there is little chance of confusing as striking a case of hemorrhagic myelitis as Case 1 with a typical case of spontaneous hematomyelia, the clinical and pathologic relation of the two should be mentioned, especially as there have been many cases reported in which the clinical symptoms would leave one in doubt whether the process was inflammatory, hemorrhagic or both. Important clinical points to differentiate hematomyelia from acute diffuse hemorrhagic myelitis are: the absence of fever, the suddenness of the onset without premonitory symptoms, often with acute pain, the rapid sequence of paralysis localized in the part corresponding to the hemorrhage, localized anesthesia, lack of progressive extension to new areas, normal white count and normal or nearly normal, spinal fluid constituents.

The pathologic lesions of hematomyelia may be distinguished by their circumscription, the absence of inflammatory products, the picture of blood extravasation transversely, with subsequent ascending and descending degeneration of the tracts, in some cases tubular hemorrhages in the gray matter, and, when not traumatic, intact meninges.

In comparing hemorrhagic myelitis to hemorrhagic encephalitis, or encephalomyelitis, as a pathologic process, certain resemblances appear. For instance, both have the ear marks of an infectious etiology, the hemorrhage being evidently secondary to an inflammatory process in which the meningeal vessels are involved. Strümpell's first case of acute hemorrhagic encephalitis, it will be recalled, followed a bronchopneumonia. An enlarged spleen and other signs of infection were noted. Cultures from the brain, however, were negative. He assumed a primary local infective agent with secondary hemorrhages.

D'Allocco, too, reported a case of acute polioencephalitis in a child, with sudden onset of inflammation symptoms. At necropsy there were vascular occlusions of the cortical vessels following an endophlebitis or endarteritis.

Langbein and Oeller discuss at length the pathology of a case of acute hemorrhagic encephalitis occurring in a woman of 35 years whose acute symptoms lasted only two days. Death occurred one-half hour after lumbar puncture. The spinal fluid was under some pressure and was blood stained. It showed a positive globulin and microscopically a great excess of polymorphonuclear leukocytes but very few lymphocytes. All cultures remained sterile. On section the brain showed areas of thrombosis and hemorrhagic transudation. These authors regarded it as difficult to determine whether the thrombosis was primary or secondary. Because of the infiltration extending to all the vessel coats and even to the connective tissue, and the presence of meningeal affection, an inflammatory origin would seem likely; the absence of encephalitic changes, however, led the authors to theorize that the extensive arterial oozing may have been due to the thrombotic plugging of the veins. An interesting feature of this case is that the patient had a patent foramen ovale, though no mention was made of clinical phenomena therefrom. The spinal fluid characteristics, with excess of blood and polymorphonuclear cells, are in striking accord with my Case 1.

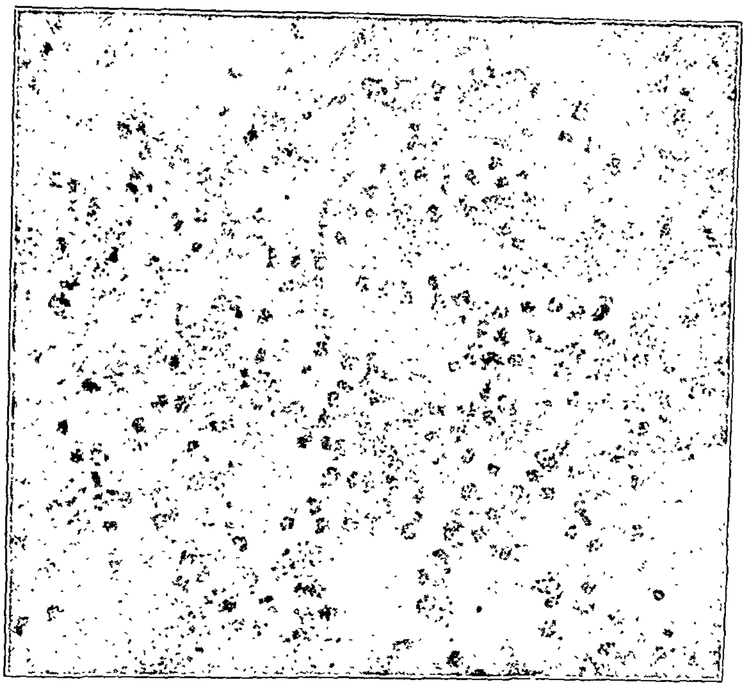

Fig. 4.—Case 1, E. W. Exudate, showing the large proportion of polymorphonuclear leukocytes, beginning necrosis and the presence of blood pigment.

ETIOLOGY

In the absence of positive proof of the presence of organisms in Case 1, all cultures being negative, and no bacteria found in tissues, we must resort to theoretical grounds for probable etiology.

Barlow, Schiff and several others have reported cases of myelitis consequent to measles, typhoid and other infectious diseases, and I now have under observation a case of localized myelitis following pneumonia. The primary symptoms in Case 1, however, were confined to the spinal cord.

Though this girl was generally fatigued, no evidence as to the point of entrance of an infective agent is at hand. That an infectious agent was at work, however, is suggested by the temperature, white count and prostration, which were in contrast with Case 2.

The pathologic findings, moreover, bear convincing evidence of an infectious as against a purely toxic reaction, as characterized in Case 2.

In spite of these appearances, it is safe to say that the ordinary infectious organisms are absent, as are, apparently, the ovoid bodies and toxic products of anterior poliomyelitis. At any rate, no characteristic reaction was produced in monkeys by injection of the glycerinated cord from Case 1.

The primary locus of the inflammation in myelitis has led to spirited discussion; whether in the circulatory apparatus as advocated by Mayer and Schmaus,

TABLE 1.—DIFFERENTIAL DIAGNOSIS

	Ascend. Hem. Myelitis	Landry's Paralysis	Poliomyelitis
Onset	Sudden constitutional symptoms. High fever. Severe pains in legs.	Mild prodromata. Paresthesias. Little or no fever. Pain absent.	Sudden constitutional symptoms. Fever early. Headaches, backaches.
Course	Short duration after hem. occurs. Continuous fever. Complete sensory and motor paralysis, ascending type. Peripheral nerves not involved. Cranial nerves not involved. Sphincters paralyzed. Respiratory failure.	Duration may be prolonged. Fever absent. Motor paralysis complete, only slight sensory. Asc. type. Peripheral nerves occasionally involved. Cranial nerves occasionally involved. Sphincters intact. Respiratory failure.	As paralysis appears, fever begins to subside. Motor paralysis of certain limbs. Mild sensory, or absent. Peripheral nerves seldom involved. Cranial nerves seldom involved. Sphincters occasionally involved. Resp. or heart fails.
Elec. React.	Course too short for abnormalities.	Normal faradic. Normal galvanic.	R. D. develops in paralyzed limbs.
Atrophy	None	None	*In paralyzed limbs.*
Recovery	Not in typical cases	Occasionally complete, even after nearly complete paralysis.	In most cases. Atrophy of paralyzed limbs with contractures.
White Count	High	Normal or slight	High early, slight later.
Spinal Fluid—			
Pressure	Plus	Normal	Plus.
Aspect	Bloody	Normal	Normal.
White Cells	100 +	Under 20	20—100.
Red Cells	Profuse	None	Occasional.
Lymphocytes	Moderate	Occasional	Profuse.
Endothelial Cells	Occasional	Rare	Occasional.
Polymorphonuclears	Profuse	Rare	Rare.
Plasma	Occasional	Rare	Occasional.
Disintegrated	Plus	None	Rare.
Globulin	2 plus	Plus or minus	Plus.

the ganglion cells (Charcot), or the glia tissue (Goldscheider, Marinesco). While the evidence in our case points to the primary involvement of the blood vessels, especially as the nerve elements are practically intact except where overwhelmed by the hemorrhage, it must be admitted that in those areas the destruction of all three tissues is fairly complete. Leyden observes that primary hemorrhages of the spinal cord are exceedingly rare, except those due to concussion, and concludes that, anatomically, a sharp separation between primary hemorrhage with subsequent myelitis from primary hemorrhagic myelitis is only possible in the rarest cases.

Circulatory factors affecting the occurrence or extent of hemorrhage must have some consideration. For instance, the permeability of the vessel coats must be dependent on the individual resistance of those coats to the disintegrating power of the toxic products. A factor that needs consideration is the liquefaction or noncoagulability of the toxic blood. Still another is forced on us by Case 1, namely, the open foramen ovale. We can little more than speculate as to the impaired resistance of the imperfectly oxygenated blood and the abnormal duties which fall on the capillaries thereby, but it cannot be disregarded as a factor, after its occurrence in this striking case and the case of Langbein and Oeller above referred to.

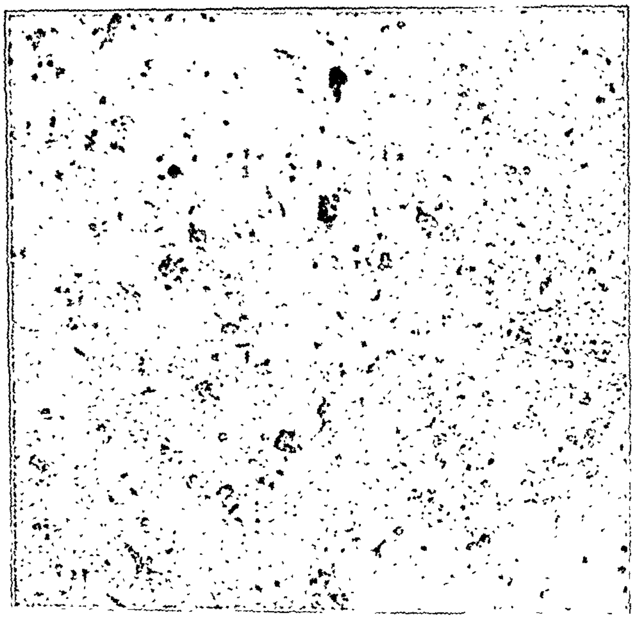
Fig. 5.—Case 2, E. C. Nucleus of VII, showing degeneration of the nerve cells and the presence of satellites.

Transmissibility.—It may seem unnecessary to discuss the transmissibility of hemorrhagic myelitis when the agent is unknown, but it may be helpful to draw a contrast on an etiologic basis between the three cases reported above. Assuming that Case 3 was a fulminating case of poliomyelitis, the success of Flexner, Noguchi and others in direct transmission of the disease to monkeys, would warrant the expectation of a similar result from this boy, had his spinal cord been obtainable. On the other hand, the glycerinated cord from Case 1 produced no lesion in monkeys, and, so far as this evidence goes, the condition is not similarly transmissible.

The foregoing data likewise are of some importance in making a differential diagnosis between the three types of ascending paralysis, since Case 1 has failed experimentally to produce symptoms of poliomyelitis in monkeys, while Case 2 is typical of ascending toxic paralysis (Landry) from no case of which, so far as I can ascertain, have the globoid bodies been developed or poliomyelitis caused in monkeys.

In this connection I might state that, in a recent personal communication, Dr. Flexner states that he is unaware that any positive infections of monkeys have occurred from cases of typical Landry's paralysis.

It may be remembered that Dr. Gordinier reported before the American Neurological Association last year a case of Landry's type; the spinal cord was then in the hands of Dr. Noguchi for inoculation. Evidently the inoculation in this case was unsuccessful, for a recent communication from Dr. Noguchi fails to throw any light on the transmissibility of this disease.

The procedure which to me appears to give the greatest aid in practical differentiation of the three types is the spinal fluid examination, especially the cell count by the Alzheimer method.

Of course, the mere appearance of a fluid which is sanguinolent, that is, uniformly mixed with blood and not coagulated, indicates the hemorrhagic type, but the presence of an enormous preponderance of polymorphonuclear leukocytes over lymphocytes is an effective differentiation from either the Landry's or the poliomyelitic type. The differential count is even more necessary as between Landry's and poliomyelitis,

TABLE 2.—PATHOLOGIC DIFFERENTIATION

	Ascend. Hem. Myelitis	Landry's Paralysis	Poliomyelitis
Spinal Cord—			
Cells	Not degenerated	Degenerated	Degenerated.
Reds	Profuse	None	Few.
Lymphocytes	Increased	Few	Many.
Leukocytes	Many	Absent	Few.
Ameboid glia	Present	Absent	Present.
Endothelial cells	Present	Absent	Present.
Vessels	Engorged and ruptured	Changes slight	Engorged at anterior horns.
White matter	Edematous, infiltrated with hemorrhage. Leukocytes, lymphocytes, etc.	No edema. No hemorrhage. Occasional lymphocytes	No edema. No hemorrhage. No lymphocytes.
Gray matter	Same as white, cells intact or disintegrated	Slight, injected with lymphocytes. Cells degenerated	Marked infiltration with lymphocytes. Cells degenerated.
Blood pigment	Marked	None	Slight.
Lipoid	Cortex	Cord and cortex	Rare.
Periph. Nerves	Normal	Normal, or occasional involvement	Secondary degen. (motor).
Pia—			
Vessels	Engorged. Edema	Slight engorgement No edema	Slight engorgement. Slight edema.
Infilt. reds	Many	None	Few.
With lymphocytes	Few	Few	Many.
Polymorphonuclears	Many	None	Rare.

for the gross appearance may be identical and the globulin test is apt to be present in both, but any marked pleocytosis, especially of lymphocytes, with traces of blood or endothelial cells is a strong indication against Landry's type and in favor of acute poliomyelitis.

The comment of Dr. Flexner, who, with his staff, was good enough to examine pathologic specimens from this case as well as to inoculate monkeys with the glycerinated cord, was as follows:

> "I have examined the specimens and find the lesions as described by your pathologist. They are not typical of poliomyelitis. The only feature in which they resemble poliomyelitis is the infiltration about the vessels in the pia and in the gray matter; but the infiltrations there are relatively slight for the degree of hemorrhage and the cells in some places are chiefly polymorphonuclear and not lymphocytic. On the other hand, the nerve cells do not show the usual necrosis with invasion of leukocytes — or neurophages.
>
> "The inoculations of monkeys with the glycerinated cord were unsuccessful. This does not necessarily mean that the specimen was not derived from a case of poliomyelitis, since it is not possible to transfer all specimens of glycerinated cord from cases of poliomyelitis to monkeys; but taken together with the nontypical character of the lesions I am inclined to think that the case was probably not one of epidemic poliomyelitis."

While it was not my intention to enter the arena of discussion regarding the nosology of acute inflammatory conditions occurring to the spinal cord, I find myself interpreting the suggestions which the foregoing cases seem to bring.

On general principles I believe that names should be descriptive of pathologic processes, and this precept has evolved the somewhat unfamiliar title of my paper. No other designation seems fitting to describe Case 1.

When we come to Case 2, its striking resemblance to the original case reported by Landry in 1859 makes us confident that it belongs to this group, so peculiarly free from macroscopic lesions.

The view held by some authors that no case showing the slightest microscopic change from the normal can properly be called Landry's seems to me untenable. In the first place, it ignores the fact that modern laboratory methods and equipment bring to light lesions which would have been undiscovered not so many years ago. Further, it is reasonable to suppose that any etiologic factor virulent enough to cause death must be productive of pathologic changes, whether or not they escape the microscope. These changes naturally become more marked, too, according to the nonresistance of the victim's tissues.

It seems that we should rely more on the type of tissue changes which accompany the clinical data and determine whether they appear to be toxic or grossly inflammatory.

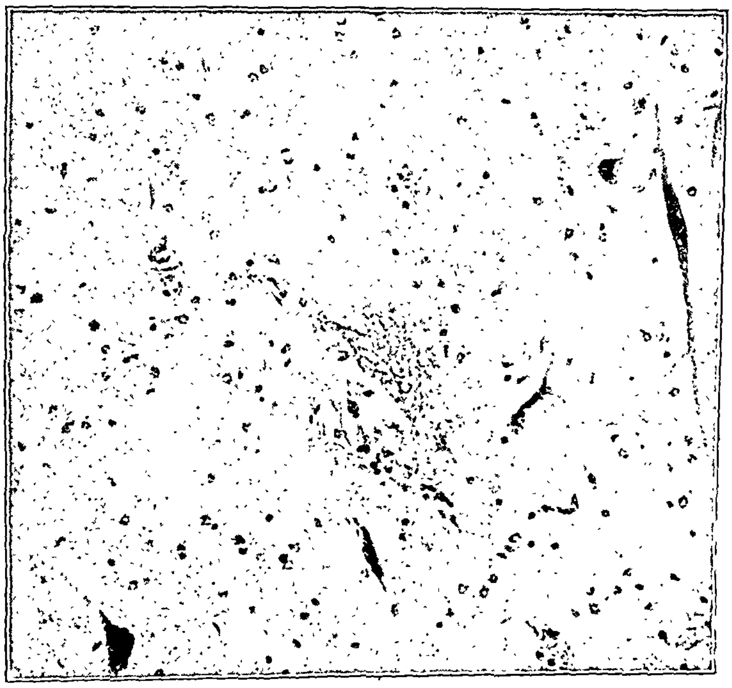

Fig. 6.—Case 2, E. C. Lumbar cord, showing cells of the anterior horn. Small numbers of lymphocytes and an area of fibrin network about a vessel. A degenerated cell on each side of the vessel.

In going over the literature I am not unmindful of the confusion which seems to exist in the minds of many as to the meaning of Landry's paralysis, and, in a measure, I sympathize with the accumulated opinion of Wickman, Taylor, Schmaus and others that the advisability of retaining the title is questionable. Unless, however, these or other authors supply the proof that Landry's paralysis and anterior poliomyelitis are identical it seems our duty to remember the type even though we forget the title.

The suggestion of Taylor to include practically all inflammatory conditions of cord and brain in the term "poliencephalomyelitis" appeals through its convenience, even as the all-inclusive term "psychoneurosis" in functional disorders, but if we all gather under one roof let us erect partitions in their proper places lest we sleep in the kitchen.

By continued animal experimentation and toxicologic research these myelitic diseases must yield up their true etiology and take their corners. Our pride in the work of Flexner, Noguchi and others should make us bent on furnishing them glycerinated material especially from Landry's type of paralysis, at the earliest opportunity, that our knowledge may increase. Until the time, however, that our laboratories can pin a label on the factors responsible for the three types above reported, I trust it has not been amiss to call attention to their apparent differentiation.

SUMMARY

An acute ascending hemorrhagic myelitis, as exemplified by Case 1, seems to occupy a unique place allied to, but not identical with, either myelitis or hematomyelia. Its clinical resemblance to acute ascending paralysis, either of the poliomyelitic or Landry's type, is striking, though closer analysis of symptoms and pathologic findings points to the existence, by the clinical data before us, of three distinct types of acute ascending paralysis.

Further confirmation of these types must wait on definite laboratory differentiation, which seems every day to be nearer completion.

25 High Street.

ABSTRACT OF DISCUSSION

Dr. Charles R. Ball, St. Paul: In my own work I have been somewhat uncertain as to the etiology of the cases grouped under the heading Landry's paralysis. Whether there is an ascending paralysis of an entirely different origin than the one caused by an acute poliomyelitis seems not as yet to have been proved. In spinal fluid examinations it is very important to differentiate between hemorrhages due to perforations of the blood vessels made at the time of the puncture and hemorrhage from some other cause. Centrifuging the fluid is perhaps the best means of making this differentiation. In recent hemorrhage, after centrifuging, the spinal fluid becomes perfectly clear; in old hemorrhages, however, it always shows a yellow tinge due to the presence of the hematin in it. It seems to me that being absolutely certain as to whether the hemorrhage was caused by an accident in puncture, or by the disease itself was one of the most important points to be established in determining the diagnosis in Dr. Burley's cases.

Dr. Benjamin T. Burley, Worcester, Mass.: I quite agree with Dr. Ball that it is very important to get spinal fluid without traumatic blood. It is usually fairly readily told whether the blood is traumatic or not, because usually the traumatic puncture shows blood at first and becomes clearer later. There is a typical appearance to blood which is thoroughly mixed with a spinal fluid and with increase of cells, for which some one seems to have coined the word sanguinolent. Unless one gets a satisfactory puncture the first time, it is advisable to repeat the puncture later.

KNEE JOINT DISABILITY CAUSED BY HYPERTROPHY OF THE ALAR LIGAMENTS *

ROLAND O. MEISENBACH, M.D.
BUFFALO

Notwithstanding the well-defined surface anatomy of the knee joint, especially in its anterior portion, it is not always a simple matter to differentiate the actual condition within the joint in some of the disabled knees which come to us for relief. This statement is confirmed by many writers, and it appears several times in the literature. This is true especially in those cases which do not give classical symptoms of one or the other of the many conditions which are constantly being encountered in joint surgery.

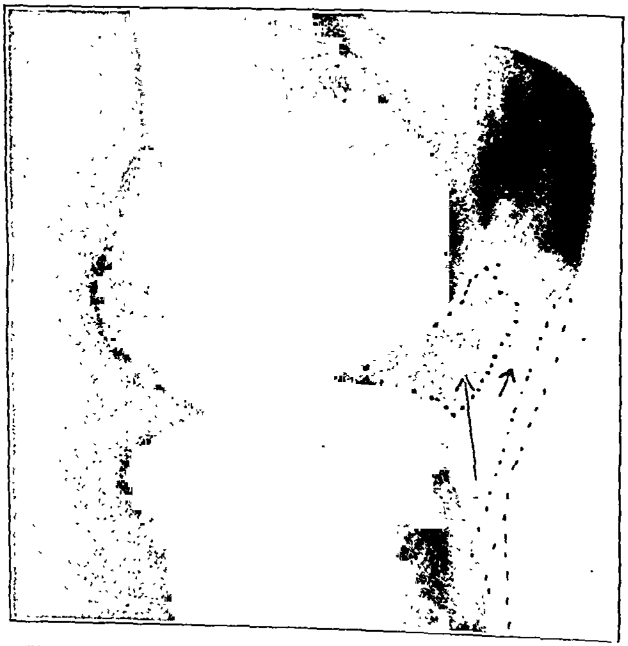

Fig. 1.—Patellar tendon, infrapatellar fat space and hypertrophied alar ligaments.

Not alone in the acute knee, but also in the chronic, do we frequently notice that definite subjective symptoms are absent. This, I believe, is one of the reasons for the frequency with which an acute disability of the knee joint is tolerated by the patient and terminates in a chronic disabled knee. Either the patient expects spontaneous relief, or the condition is deemed not direct enough for active interference.

The knee joint is constantly exposed to injury; this injury may be from external or from internal sources. The external sources comprise weak feet, irregular shoes, faulty alignment of limb following fracture of the leg or thigh, or both, besides the leverage twists, wrenches and actual direct violence.

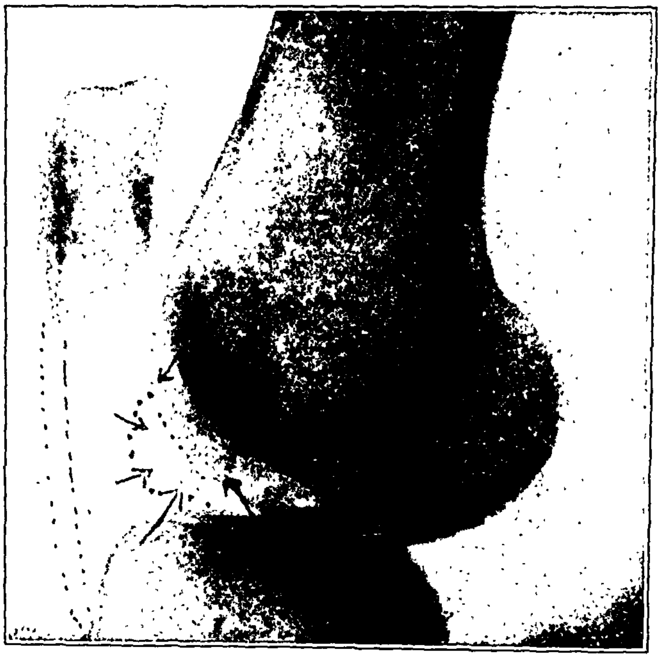

Fig. 2.—Dark mass, irregularly defined and mottled. Hypertrophied alar ligament. Note sesamoid bone in posterior part of joint.

The internal injuries may be induced by the knee joint's mechanism or a concomitant pathologic condition, or both.

THE KNEE JOINT

Considering the fact that the knee joint is one of the most important, largest and quickest joints to become injured, one would expect that its internal arrangement, as far as the anatomy and mechanism are concerned, would be well understood by all who have to do with this joint. Its mechanism is not stable, and its anatomy differs in many instances.

Perhaps the extreme range of motion which the knee joint exerts is the cause of the variation; at any rate, I believe that many of its soft parts, especially in the anterior portion and those which have to do with the lubrication, are constantly subjected to change.

The function of the synovial membrane and its different parts, namely, (*a*) ligamentum mucosum and (*b*) alar ligaments, is to lubricate the cartilaginous articular surfaces of the gliding parts.

The anatomy of the knee joint is described by Tenney in a most thorough manner. I wish here only to emphasize some facts and to describe that which pertains to this paper, namely, the alar ligaments.

ALAR LIGAMENTS OF THE KNEE JOINT

Normally, the alar ligaments are wing-shaped folds of synovial membrane extending from the mucosa, and are in my opinion part of the lubricating tissue.

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

be at times confusing, especially when the patient gives a history of kneeling, or the bursitis is mild. The knee itself is not swollen, and on the lateral aspect of the patella in the joint line nothing abnormal is felt. However, if the bursitis is due to systemic infection, then again we may have it associated with hypertrophy of the alar ligaments.

TREATMENT

There is only one permanent treatment for knee joints with hypertrophied alar ligaments; that is, their removal. Temporary relief, or symptomatic relief, may be given in some cases without removal. Limiting the motion of the knee and strapping give relief to symptoms only, and should not be advised except in rare instances, as enumerated above. The operation of arthrotomy, advised by many, if done in conservative and skilful hands, offers very little danger, and the old idea that an operation on the knee joint means a stiff knee is, I am glad to say, past. Formerly, perhaps, this belief was well founded; but with improved operative technic in these cases the danger is at a minimum, both as to obtaining a stiff knee and as regards sepsis; it is, in fact, no greater than in some of the other surgical procedures of the day.

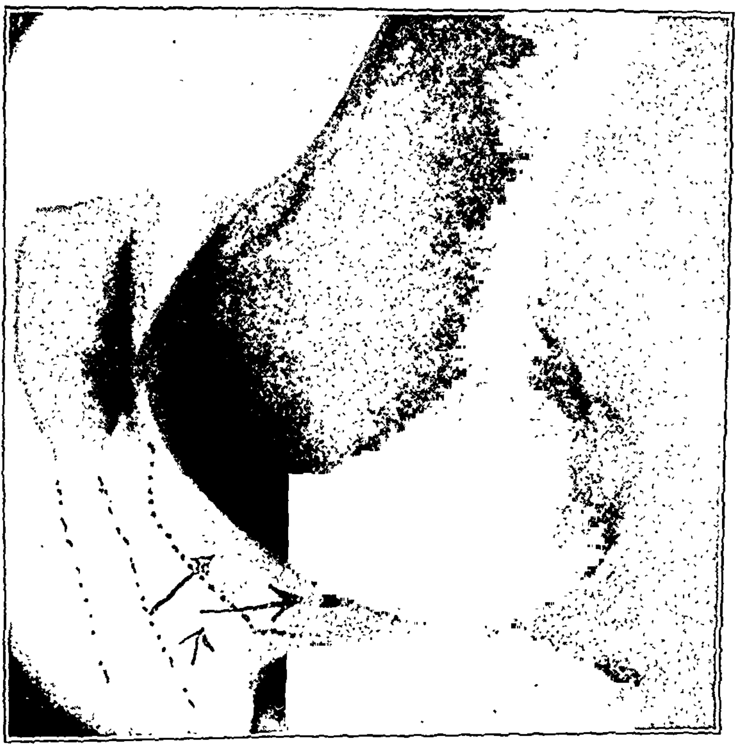

Fig. 7.—Note dark joint interspace.

In the technic of arthrotomy for the purpose of removing alar ligaments, certain principles must necessarily be observed, the same as with any other arthrotomies of the knee joint. First, there should be perfect asepsis; second, the incision should be as small as possible; third, the knee joint should be in a position of semiflexion. All bleeding should be checked before the capsule is opened; the capsule should not be held with hemostats. The finger need not enter the knee joint.

In removing the alar ligaments, they should be clamped at their base with a very fine hemostat, removed above the hemostat with scissors so as to insure no hemorrhage within the joint. Rarely tying within the joint is necessary. The capsule should be closed with silk or chromic gut and the knee joint bottled tightly and not drained. Passive motion should be done early, and the patient may walk as soon as the incision is firm. A few cases cited below will serve as an illustration:

Case 1.—Mr. B., gardener, aged 22, operated on Nov. 3, 1911, gave the following history: Two months previously, while lifting sod, using his right knee joint to assist the spade, he found his knee going weak. He gave up work and found that whenever he bent his knee or attempted to get out of a chair, he had pain. After resting the knee joint it grew better; but as soon as he attempted to walk much or ride a bicycle, the knee became painful. The knee was not swollen, and no crepitation was felt, but patient complained of pain after the knee was bent in extreme extension and flexion. A roentgenogram was taken.

A diagnosis of hypertrophy of the alar ligaments was made. The knee joint was opened by an incision on the inner border of the patella. The capsule was noted to be drawn into the joint, and when the capsule was opened, the knee joint was held in position of semiflexion. After retracting, it was noticed that two or three tabs extended from the mucous membrane in the anterior portion. The fibrous band could be seen tensely stretched, apparently from the ligamentum mucosum down to the surface of the tibia, suggesting that synovial tabs had become adherent. These tabs (alar ligaments) were removed, and the joint closed tightly. There was very little bleeding during the entire operation. Motion of the knee joint was begun on the seventh day and convalescence was uneventful. Patient returned to work.

Case 2.—Mr. G., aged 19, athlete, seen Dec. 21, 1911, gave a history of suddenly having his right knee become weakened, and at times painful. He said that he had had the habit while walking of throwing his knees in strong extension. The knee occasionally became swollen, but did not lock. A roentgenogram was taken.

The anterior portion of the joint showed a slightly dense shadow in the region of the ligamentum mucosum. Examination of the knee showed that the surface anatomy was apparently normal; no crepitation was felt on motion, and no swelling. The right foot was considerably pronated; otherwise the patient was in excellent health. Blood count negative.

A diagnosis of hypertrophied alar ligaments was made. Operation, Jan. 5, 1912. Incision on inner aspect of patella. Knee joint opened according to special technic; synovial membrane relaxed; no fluid in joint; alar ligaments removed; no other tabs protruding from synovial membrane. Patient had an uneventful recovery. Symptoms disappeared. Patient seen three years after the operation; no recurrence.

Case 3.—Mr. J., chauffeur, aged 21, had niesserian infection one year ago. Previously had been treated for flatfoot. To all appearances perfectly well, but while driving his car noticed that his right knee was painful and slightly swollen. This swelling has persisted for several months. Slight thickening felt on the internal and external aspect of the patella. Roentgenoscopy revealed thickening in anterior portion of the joint, extending well into the joint.

A diagnosis of hypertrophy of alar ligaments was made. July 18, operation, arthrotomy of right knee joint. Incision of internal aspect of patella. On opening the capsule considerable fluid emitted from the joint. Synovial membrane injected and quite vascular. Ligamentum mucosum and alar ligaments thick and boggy. Alar ligaments removed, considerable hemorrhage, one squirter from each tied. Knee joint closed tightly, no drainage. Convalescence uneventful. Patient able to continue occupation as chauffeur up to the present writing.

Case 4.—Miss P., aged 33, occupation institutional work Has always been well, with the exception of her knees, which have been painful intermittently. Patient has been accustomed to kneel frequently, many times coming down firmly. Last several months has noticed when she attempts to get up there is sharp pain, which disappears after a while, but recurs. Examination of knee joint shows slight roughening of the skin over the patellar bursa of both knees. Knee joint not swollen and no crepitation. Extreme flexion elicits some pain. Roentgenogram taken and a rather diffused shadow of homogeneous consistency seen a short distance below patella.

Diagnosis after eliminating other conditions, hypertrophy of the alar ligaments. Operation, arthrotomy, May 14, 1915. After capsule incised, ligamentum mucosum and alar ligaments were seen to be congested and one internal alar ligament adherent to the femur. The alar ligaments were removed; knee joint closed. Recovery uneventful.

CONCLUSIONS

In presenting this paper, it was my object especially to call attention to the variety of conditions which may be found in disabled knees, all of which may present more or less some of the same symptoms, but if carefully studied, will be found to be distinct entities; but more than that, to attempt to call attention to the type of knee joint which is so frequently seen, in which the symptoms are so irregular that only by a thorough search, and in some cases by means of eliminating the other conditions, the patient will obtain relief.

140 Allen Street.

ABSTRACT OF DISCUSSION

Dr. Fred. J. Fassett, Seattle: Dr. Meisenbach asked me to participate in this discussion, and I promised to look up my anatomy on alar ligaments and where they are to be found. In doing so I was quite impressed with the exact spot, because they lie just where I have found symptoms of a very definite nature that I have heretofore been unable to call by any name. I have been content with the general sweeping diagnosis of an internal derangement of the knee joint. The definite symptoms I speak of are these: Not the grating that accompanies damage to the bones, but a creepy feeling and soft crack which occur when you move the patella, as if it were rubbing over some pulpy substance. I should like to ask Dr. Meisenbach, in closing the discussion, to say a word about his method of approach to this region.

Dr. J. T. Rugh, Philadelphia: It has been my privilege to operate in about a dozen of these cases. To me the symptomatology is rather clearly defined, and it constitutes in my experience a distinct condition which in the vast majority of cases requires surgical interference for its correction. These cases, as I find them, usually present an intermittent hydrops; that is, there will be an injury to the joint from overuse of the part or from a blow or a fall, and this will be followed by an effusion into the joint, which subsides after a few days. After the subsidence of this joint swelling, examination of each side of the ligamentum patella will give a sensation as of a substance rolling away from the thumb. One can feel the mass slipping under the thumb. My plan has always been to make a lateral incision, either internal or external or both, according to the conditions present, and through that incision remove this ligament. It is very easily done with a pair of scissors. The result has been functionally perfect.

Dr. Roland Meisenbach, Buffalo: In answer to Dr. Fassett's question, I might say that the lateral incision has the advantage that in most knee joints by this route the alar ligaments are immediately exposed and are easily reached without exposing very much of the knee joint itself. It also has the advantage that in many of the knee joints there is very little hemorrhage by this incision. It is essential to take further precaution to prevent hemorrhage within the joint, also to prevent hemorrhage before opening the capsule. I would like to emphasize the fact that the capsule should not be clamped with hemostats, but should be held apart with silk retractors. I have always felt that the alar ligaments have been very much neglected, and I was glad to hear Dr. Rugh confirm this belief. I think that in many of our knee joints we obtain a history of intermittent symptoms, but these intermittent symptoms do not necessarily extend over regular times, as in intermittent hydrops. In my earlier cases I believed that the hypertrophy of the alar ligaments explained intermittent hydrops, but later experience has taught me differently. I wish also to emphasize the fact that patients suffering with hypertrophy of the alar ligaments assume a peculiar gait with a view of protecting their joint on all occasions. I believe this is partly psychologic, and partly due to the fact that the pain comes on suddenly and they expect it, but are unable to know exactly what motion of the knee joint brings it on. In some of the cases one should be conservative enough also to have the different laboratory tests made, and one should be on the lookout for other conditions, in which the hypertrophy of the alar ligaments may be a residual hypertrophy due to a general diathesis.

ROENTGENOGRAPHIC BONE CHANGES IN A CASE OF POLIOMYELITIS

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CHICAGO

That the bones undergo atrophic changes in the course of poliomyelitis is a well-known fact, and the following case illustrates the extent such a bone atrophy may attain:

History.—Man, aged 39, entered the Cook County Hospital with a complete paralysis of the lower limbs. The patient states that he has been unable to use his legs since the age of 2 years, when he sustained a fall, following which he was confined to bed for about two years. Until the age of 10 he lived at home, then for five years at an orphan asylum, and then was an inmate at the Dunning asylum up to the age of 34, whence he was transferred to the Oak Forest infirmary. Here, he states, the inmates began to accuse him of various things. He could hear them "talking" about him, "sneering" at him, and thinks it quite possible that "they have formed a conspiracy against" him. Any other diseases, including venereal diseases, he denies.

His mother died at Dunning insane asylum when the patient was about 5 years old. The cause was some form of insanity. The father died from an unknown cause when the patient was 12 years old.

Examination.—The patient is a rather poorly nourished middle-aged man, somewhat apathetic, but oriented as to time, place and persons. He answers questions intelligently, but is emotional when, with tears in his eyes, he complains of "charges" preferred against him and of the hospital not being "a safe place" for him. He cannot walk, and keeps the lower limbs flexed in the hip and knee joints, while the feet are drooping (Fig. 1). The legs cannot be extended beyond 135 degrees. There is some movement in the toes, which are irregular in their shape and growth. The second toe of the right foot is of the same length as the great toe, and the fourth is of the same size as the fifth. The left fourth toe is much smaller than the fifth. The size of the lower limbs is greatly diminished, entirely out of proportion to that of the upper half of the body, resembling the extremities of a boy. Thus, the length of the lower limbs is 21 inches, measured from the popliteal fold to the postero-inferior border of the os calcaneum, as against 31 inches, which is about the average normal length for his age. The length of the feet, measured from the postero-inferior border of the os calcaneum to the extremity of the third toe, is 7 inches for the right, and 6¾ inches for the left (normal about 9½ inches). The circumference of the lower limbs, at the level of 10 cm. above the external malleolus, is 5¼ inches on either side (instead of 8 inches); 12 cm. below the knee joint it is 6¼ inches on either side (the normal average is about 11¼ inches). At the level of 15 cm. above the knee it is 9¾ inches, against 15 inches, which is the average normal. All the muscles of the lower limbs appear greatly reduced in volume, especially the extensors of the legs and feet, where fibrillary twitchings are marked. The movements, as abduction, adduction of the legs, flexion and extension, are possible, but greatly limited, and the muscle power in the atrophied limbs is almost entirely absent.

The electric examination reveals a complete reaction of degeneration in the muscles and nerves of the legs.

The tendon reflexes, as knee jerk and achilles, are absent on both sides, the plantar, cremasteric and abdominal present. The pupillary reflex and eye grounds are normal. Sensory disturbances, as well as those of the bladder and rectum, are absent.

Of other anomalies we should point out the small size of the head (microcephalous), and a marked lumbar lordosis and, at the level of about the second sacral vertebra, a dimple in the skin with a lipomatous nodule below it.

Thus, the examination shows a great decrease in size, or atrophy, of the lower limbs, which are diminished both in length and in width. The cause of this atrophy is undoubtedly an old poliomyelitis, in the form of a flaccid paraplegia, combined with a paralytic lordosis, secondary contractures in the knee joints and some signs of degeneration, as evidenced by the disfiguration of the toes, and small-sized head. The mental condition of the patient speaks for dementia praecox.

The paralysis and the atrophies are perfectly symmetrical in character, the shortened lower limbs resembling, when compared with the rest of the body, those of a 10 or 12 year old boy. The undersized condition of the lower limbs is to be ascribed to the atrophy of the muscles and bones. The muscular atrophy can be determined by means of the electric current, or palpation, and direct measurements, while that of the bones can be determined by means of roentgenoscopy. This shows (Fig. 2) that the femur and both bones of the leg are greatly reduced in size. The bones are thin, appear smooth, polished as it were, and deprived of their usual characteristics. The bone seems to be somewhat transparent, the thickness of the solid bone substance being greatly reduced. These changes are confined to the diaphysis only, and do not involve the epiphysis. All these changes, so well to be seen on the roentgenogram, were pointed out long ago by Joffroy and Achard[1] before the discovery of the Roentgen rays. They explained the changes by the lack of muscular activity, which is mainly responsible for the shape and irregularities of the bones. These, of course, must disappear or undergo some transformations in old cases of poliomyelitis, like ours, in which muscular contractions are absent.

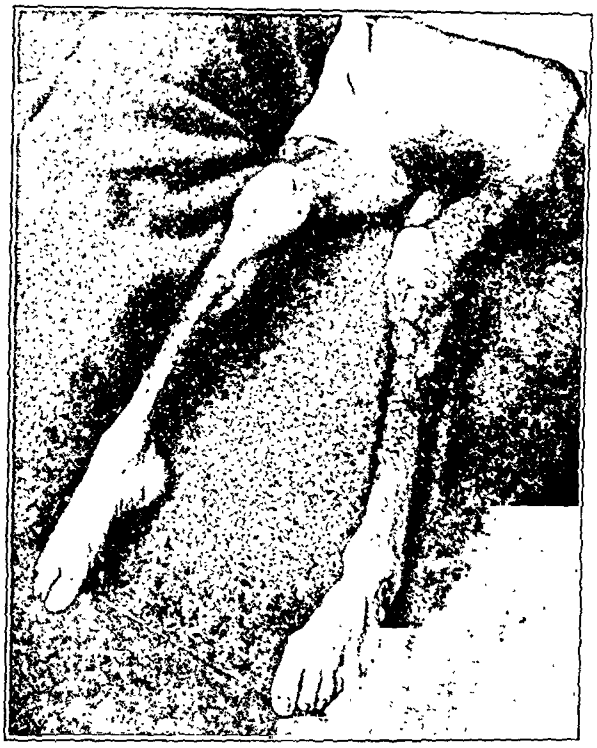

Fig. 1.—Lower limbs of patient.

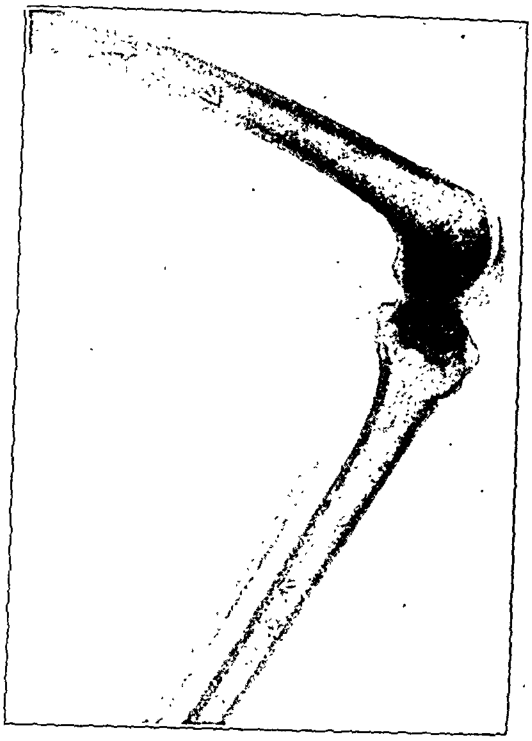

Fig. 2.—Roentgenogram showing reduced size of bones.

These findings were afterward fully confirmed by Archard and Levy[2] through roentgenoscopy, and also by Oppenheim[3] and Bruns.[4]

31 North State Street—Cook County Hospital.

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[1] Joffroy and Achard: Paralysie spinale aigue de l'enfauce, Arch. de méd. expér. et d'anat. path., 1889, i, 57.

[2] Achard and Levy: Radiographie des os dans la paralysie infantile, Nouv. iconog. de la Salpêtrière, 1897, p. 324.

[3] Oppenheim: Lehrbuch der Nervenkrankheiten, Berlin, 1908, i, 234.

[4] Bruns, in Bruns, Cramer and Ziehen: Handbuch der Nervenkrankheiten im Kindesalter, Berlin, 1912, p. 327.

Mental Defectives.—We have come to realize that our moral judgments are inextricably mixed up with social judgments; that general intelligence, learning, experience, etc., are brought into play in the exercise of every moral judgment; that millions of brain processes are involved in every thought and act, and conduct is an expression of the whole machinery at work; that there is no ground for the presupposition of a separate sense that sits in judgment, approving or disapproving of our actions. In short, a mentality incapable of forming moral judgments is likewise incapable of forming normal judgments along other lines, and is (*ipso facto*) a defective mentality, and is demonstrable by a thorough examination of general intelligence, judgment, reasoning capacity, etc. These are mental defectives, and not moral imbeciles.—V. V. Anderson, *Boston Med. and Surg. Jour.*, Sept. 23, 1915.

Therapeutics

PNEUMONIA

As the season approaches when pneumonia begins to be more frequent, until, in February or March, it generally reaches its highest death rate, it is well to reconsider some of the fundamentals in its treatment.

In many cities and in most states pneumonia has become the chief cause of death, tuberculosis having given way to this infection. The pneumococcus is ever ready to attack any debilitated individual, and especially to add its attack to that of the influenza bacillus. The very fact that the death rate from pneumonia is increasing shows that the prognosis is not good. If the disease tends to recovery like most acute infections, it certainly needs a great deal of aid. A fatal issue can readily be hastened, if not precipitated, by misdirected efforts and by neglect. The great seriousness of this disease is due to its effect on the heart; consequently the care of the heart is of paramount importance.

The treatment may be discussed under various heads, as follows:

1. *Rest.*—This must be as near perfect as possible. Not only should the room be situated for the best possible fresh air, but it also should be as quiet as possible. Friends and relatives should not disturb the patient. The more he talks and the more he thinks, the more rapidly will his heart pulsate, the more rapidly will he breathe, and the more mentally restless and consequently sleepless will he be. Sleep and a quiet heart are more essential in pneumonia than in almost any other disease. Perfect rest does not mean that the patient should not be turned frequently, or that he should not have at times several pillows; in fact, it has lately been advocated for a patient with pneumonia to sit up once or twice a day for a short time, even in a chair. This is perhaps a little too radical, but the point should be emphasized that the circulation in the lungs should be changed by alterations in position. A patient with pneumonia should not lie flat all the time. Hypostatic congestions readily occur with pneumonia, especially if the heart's action is impaired.

2. *Fresh Air.*—It has now long been demonstrated that a pneumonia patient has less fever, a slower pulse, a better blood-pressure, and breathes less frequently in cool, clean air than in close house air, and this whatever the season. Wards on the roof are very valuable for hospitals in the treatment of pneumonia as well as tuberculosis. The balcony, veranda, or even tent treatment of pneumonia is advisable at certain seasons of the year with certain types of patients, when such facilities are obtainable. It is always essential that the room of a pneumonia patient should have more than one window — the more the better — and that these windows should be widely open, except when the patient is being bathed or his clothing is being changed. Under any circumstances it is not necessary to have a draft of cool or damp air blowing directly over the patient's face, but screens can modify the direction of the wind or brisk air. Very young children and old people should not be subjected to severe cold atmosphere, while older children and strong adults may not only endure cold, but may even thrive in it. The fresh air or outside air treatment of pneumonia is subject to the modification of common sense. If a patient's body and extremities become cold or chilled when properly covered, the fresh air treatment is too severe.

3. *Diet.*—The food of the patient should represent something of all the elements required for nutrition. This means protein in the form of eggs, meat juices, properly made meat broths, and milk. The eggs may be in any form desired, except fried. The milk should never be sufficient in amount to cause intestinal gas, or gastric indigestion.

The next very necessary element for nutrition is starch, and it should not be forgotten that many a seriously ill patient finally dies really of acidemia from carbohydrate starvation. Egg albumin and milk do not represent the proper food for patients who are ill more than a few days. The starches can be presented in cereal gruels, rice, oatmeal, malted milk, toast, crackers, and even by potato soup. Ice cream, custard, chocolate, and a small amount of cane sugar or milk sugar are all of value.

The patient should be allowed plenty of water, as, however valuable a deprivation of water may be in aborting an acute cold or acute bronchitis, it is not advisable to withhold water in pneumonia. Unless there are edemas from a failing heart or from kidney insufficiency, plenty of water will increase the amount of urine and therefore remove more products of waste metabolism from the blood, thus tending to prevent the toxemia from the disease which is to be feared. It promotes the secretion of the skin, which is desirable, and also renders the exudate in the lungs less tenacious and more easy of expectoration.

Elements of nutrition which must not be forgotten are: sodium chlorid, iron when meat juices are not given, and lime when little milk is given, and especially if there is much blood in the expectoration. The sodium chlorid can be given by properly salting the patient's food, especially his gruels, and even at times his milk. The iron may be given as a saccharated oxid of iron (*Eisenzucker*) 3-grain tablet, crushed at the time of taking, or crushed by the patient's teeth, and administered twice a day. The lime may be given as lime water in tablespoonful doses in milk or in water, three or four times in twenty-four hours; or it may be given in a capsule as calcium glycerophosphate, in 0.30 gm. doses.

The whole question of the diet is also subject to common-sense modification to fit the patient. There are enough suggestions in the foregoing to furnish sufficient nutrition while meeting almost any patient's desires. The main object is (1) to avoid starving the patient on any element that he requires to promote his metabolism and keep up his nutrition; and (2) to avoid gastric and intestinal indigestion. If the tongue is heavily coated and the patient is so seriously ill that he does not digest properly, 5 drops of dilute hydrochloric acid in water, directly after his protein meals, will aid the stomach digestion and often clean the tongue. It may also stimulate intestinal digestion. If there is much intestinal gas the diet should be closely studied by the physician to ascertain which food is causing it. Provided that the blood-pressure is not too high, that the heart is not too irritable, and that the patient is not too nervous and restless, coffee morning and noon, or coffee in the morning and tea at noon, or tea both times if the patient prefers, is advisable and often beneficial. Tea and coffee should be considered as representing caffein, and if the action of caffein is desirable, these beverages may be given. They should not be given in the late afternoon or evening, as they tend to prevent much needed sleep.

(To be continued)

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SATURDAY, OCTOBER 23, 1915

OBESITY AND STARVATION

The essence of the successful method for reducing weight in those suffering from obesity lies in keeping the intake of energy below that of the output. Theoretically, complete fasting constitutes the most prompt method of accomplishing the end sought. It is a well-recognized fact, however, that starvation prolonged over a period of more than a few days, either voluntarily or as an incident of disease, may lead to unpleasant symptoms. Headache, nausea and dizziness portend the existence of conditions that are not exactly normal, and frequently they can be made to disappear promptly by the ingestion of even a little food. Most modern "treatments" for obesity, therefore, consist in underfeeding rather than complete fasting, particular care being directed to conserving the protein of the body so that the reduction in weight shall represent essentially a loss of body fat oxidized to furnish energy to the underfed individual.

In the course of observations on the voluntary fasting of two exceptionally obese patients of the Massachusetts General Hospital in Boston, Folin and Denis[1] noted the usual development of the indications of "acidosis," that is, an increased elimination of acetone, aceto-acetic acid, and particularly of beta-oxybutyric acid and ammonia in the urine. In one of the subjects the figures were exceptionally high, amounting to over 18 grams of beta-oxybutyric acid and no less than 2.5 grams of ammonia-nitrogen during the fourth day of starvation. The appearance of such products in these amounts is in accord with the widespread scientific belief that the "acetone bodies" are derived chiefly from incompletely oxidized fat. When the obese are compelled to depend on their store of fat for maintenance, one might reasonably expect these intermediary products to "crop out."

In order to relieve the subjective symptoms associated with this fasting acidosis, Folin and Denis interrupted the period of complete starvation by a period of very moderate diet just sufficient to cause the disappearance of the "acetone bodies" from the urine. Thereupon a second fast was begun. Here the striking observation was made that the acidosis did not manifest itself anew until the third day of this fast, and the patient felt well until the fourth day. After an interspersed repetition of "low" diet a third fast was begun five days later. Here again the onset of acidosis was even slower than during the second period. These facts, supported by confirmatory evidence in a similar case, have suggested to the observers that with regard to the complete oxidation of body fat in starvation, the human organism is capable of at least a certain amount of adaptation, and that it is this individual factor rather than the tendency to obesity or the extent of the fat deposits in the body which chiefly determine the onset and the degree of acidosis. Folin and Denis conclude that one of the effects of repeated fastings is habituation to the complete oxidation of mobilized body fat, and a consequent retardation of the development of acidosis.

These results suggest, in the words of their discoverers, that one perfectly safe, rapid and effective method of reducing the weight of very obese persons is by a series of repeated fasts of increasing duration, the ammonia or beta-oxybutyric acid determination being used as a guide to the length of each fast.

THE RHYTHM OF THE HEART

During recent years there has been such extraordinary progress in our knowledge of the rhythm of the heart and its disturbances in disease and under the influence of drugs that probably many physicians have rather hazy ideas as to the present status of knowledge on these subjects. Progress in this field has resulted from the development of methods which have enabled clinicians to apply to the human heart some of the knowledge already available in regard to the heart of the lower animals. On the other hand, the clinical application of these methods has revealed many hitherto unsuspected conditions and raised new questions in physiology, pathology and anatomy; this has greatly stimulated further investigation along these lines. The result has been greater progress within the last few years than in as many decades previously. In this work anatomists, physiologists, pathologists, pharmacologists and clinicians have all had a part. Nor has the work been confined to one country: the Dutch (notably Einthoven), the English (Mackenzie, Keith, Lewis and Cushny for example), the Germans and Austrians (His, Hering, Wenckebach, Rothberger and Winterberg and others), Americans (Erlanger, Cohn, Eyster and Meek, to mention only a few) as well as representatives of many other nationalities have made important contributions.

The two methods which have contributed most to the solution of problems concerning the disturbances of rhythm in the human heart have been the use of venous tracings and of the electrocardiograph.[1] Both of these methods show whether or not each beat of the ventricle is preceded by one of the auricle; they show accurately the interval of time elapsing between the auricular and the ventricular contractions; in cases of abnormal or disturbed rhythms they throw much light on the point of origin of such rhythms.

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[1] Folin, Otto, and Denis, Willey: On Starvation and Obesity, with Special Reference to Obesity, Jour. Biol. Chem., 1915, xxi, 183.

Among the numerous points established by these investigations (combined with and controlled by experiments on the hearts of the lower animals) the following may be mentioned: Normally each heart beat begins in a small area of the right auricle beginning between the opening of the superior vena cava and the auricular appendix and extending toward the inferior vena cava; that is, in, or in the region of the specialized tissue known as the sinus or sino-auricular node. From this point the wave of excitation passes over the auricles causing the auricular contractions; it passes through the auriculoventricular bundle of specialized tissue (the bundle of His) to the ventricles, which contract at a definite and measurable interval after the auricular contraction. This constitutes the normal or sinus rhythm of the heart. If, however, for some reason this sinus region ceases to inaugurate impulses, or if the impulses are comparatively weak, or if they fail to reach other parts of the heart, then one or more of the latter may assume this function of "pace maker." One of the most important of the regions which may inaugurate a rhythm for the heart is the auriculoventricular node, which lies in the interauricular septum at the beginning of the auriculoventricular bundle. Impulses arising in this region reach the auricles and ventricles simultaneously or almost simultaneously, and the chambers of the heart contract at the same time; in other words, an auriculoventricular rhythm replaces the normal sinus rhythm. Or the impulse may arise still lower in the auriculoventricular bundle; thus, apparently, it may arise now in the branch passing to the right, now in that passing to the left ventricle. Many other forms of irregular rhythm, which it is impossible to consider here, have been described.

Other disturbances of rhythm result when some or all of the auricular beats fail to reach the ventricle; in other words, when there is a partial or complete "heart block." Heart block, as is now quite generally known, may result from an anatomic interruption of the connection between the auricles and ventricles, as is often the case in the Adams-Stokes syndrome; or the interruption may be only functional. In either case the ventricles develop a rhythm of their own more or less independent of that of the auricles. Functional heart block may result from increased activity of the vagi. It has long been known from experiments with animals that one effect of stimulation of the vagi is a lowering of the ability of the tissue connecting auricles and ventricles to conduct impulses from the former to the latter. Similar results may be obtained in man by pressure on one vagus, or the vagus may be thrown into increased activity reflexly, by pressure on the eyeball for example.[2] Digitalis increases the activity of the vagus center; one of the consequences is impaired conduction of impulses from auricle to ventricle and the well known condition of heart block so often occurring in the use of this drug. In auricular fibrillation, a condition which occurs in very many cases of valvular heart disease and in which the normal auricular beat is replaced by a condition of fibrillation in which many hundreds of impulses per minute endeavor to reach the ventricle, digitalis, by increasing the resistance of the auriculoventricular bundle, and so reducing the number of impulses reaching the ventricles, protects and slows the latter. This is the generally accepted view of the action of digitalis in this condition, although some details of this explanation have been questioned. Or digitalis may, apparently, cause a condition of block in lower portions of the auriculoventricular bundle leading to marked changes in the character of the beat of one or other of the ventricles.[3]

Perhaps the foregoing comments will suffice to show that, although this recent work may at first thought appear to add to the complexity of an already complex subject, it in reality tends to simplify the entire subject by bringing various phenomena under a common viewpoint. It represents the stage of synthesis which always follows a more thorough study of natural phenomena.

DIETOTHERAPY IN DIABETES

It must be frankly admitted that the underlying nature of diabetes is still veiled in deep mystery. The number of individual important facts now known in regard to the disease is large. The earliest knowledge of the attending glucosuria has been supplemented by information about the condition of the blood — the hyperglycemia of diabetes — and by such investigations as have demonstrated beyond question that the capacity of the organism to destroy sugar is impaired.[4] Other details of the perversions of metabolism, such as the acidosis and ketonuria, have been brought to light. Drug therapy has largely been abandoned, and dietotherapy substituted for it. One who has followed the progress in the study of diabetes can understand the occasions for the successive changes in the proposed dietetic measures, which include all gradations of regimen from starvation or strictly carbohydrate-free dietaries, on the one hand, to the oatmeal or potato "treatments" at the other extreme. As an expert in this field recently remarked, physicians may well come to the conclusion, after reading some of the latest literature in this field, that all of our earlier views have been turned topsyturvy.

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[1] Electrocardiography, Miscellany, The Journal A. M. A., Oct. 2, 1915, p. 1208.

[2] See, for example, Levine, S. A.: The Oculocardiac Reflex, Arch. Int. Med., May, 1915, p. 758.

[3] Cases apparently of this character were reported, and the literature reviewed, by H. A. Christian (Arch. Int. Med., Sept. 15, 1915, p. 341).

[4] The Changing Theories of Diabetes, editorial, The Journal A. M. A., Aug. 2, 1913, p. 348; Two Theories of Diabetes, March 28, 1914, p. 1023.

An intelligent appreciation of the situation calls for a brief historical survey. The earliest attempts of the more modern procedure in the dietary management of diabetes aimed at overcoming the excretion of sugar, or reducing it to a minimum by restricting the intake of carbohydrate and, if need be, likewise that of protein, which was recognized as an added source of sugar in severe cases. This method of treatment met its difficulties in the appearance of ketonuria, with the attendant dangers of acidosis, leading to the dreaded coma. Nothing short of the administration of some carbohydrate seemed to avert this incidental feature of the severer types of the disease. It was at this period that certain special dietary schemes were attempted, such as the milk, rice and potato diets, respectively. Levulose was recommended as a carbohydrate toward which the diabetic shows special tolerance. None of these proposed devices for furnishing carbohydrate in some way more acceptable to the diabetic organism gained more than passing consideration. As a rule, they offered no advantage in treatment.

Through chance observations, von Noorden hit on the routine oatmeal treatment. In certain cases in which the patients were put on an exclusive diet of oatmeal, owing to digestive disturbances which they were subject to, von Noorden noticed that instead of an expected increase in sugar output, this actually decreased. Repeated similar favorable increases of tolerance led to the publication of the facts. The new mode of dietetic management, in which the administration of large quantities of oatmeal and butter for a few days is made to follow a few days of "strict" diet or so-called "vegetable" diet familiar to all dietotherapeutists, promptly called forth protest. Prominent investigators like Naunyn and Pavy denied the possibility of cure by feeding starchy cereals. Naunyn and his pupils attempted to explain the utilization data of the oatmeal administrations by the contention that the cereal carbohydrate becomes peculiarly prone to fermentative decomposition in the alimentary tract. It is destroyed without significant utilization, we were assured.

Despite its theoretical incompatibility and the outspoken criticism of well-known writers, the oatmeal treatment for certain types of diabetics has not been abandoned. From time to time, groups of successful cases have been reported by competent, unbiased clinicians. Every one who has achieved any success with the procedure has emphasized that a suitable preliminary strict regimen is indispensable to success, and also that the scheme fails in many instances. The striking character of some of the statistics, which show greatly improved tolerance after a few days of the oatmeal diet, as well as the character of the names attached to the reports, leaves the impression that some element of merit is hidden in the observations. The attempts at explanation have not been fortunate. At first it was believed that some specific chemical constituent of oatmeal other than starch is responsible for the increased carbohydrate tolerance and the amelioration of the ketonuria. This now seems unlikely. It was believed that oatmeal components might either act on the ductless gland mechanism in some undiscovered way, or render the kidneys less permeable to sugar. The more recent analyses of the blood-sugar content have withdrawn any probability of the latter explanation. Additional explanations need not be advanced here.

The supposed specificity of oatmeal in its favorable effect on the diabetic was gradually dispelled by the demonstrations, not very convincing at first, but more emphatic as the technic became more consistent, that other cereal products could be substituted with success. Blum, Petersen, Lampé, Klemperer and others have reported the occasional favorable use of a variety of natural products other than those derived from the oat seed. The list is not inconsiderable. In every case, however, emphasis appears to have been put on the necessity of restricting the carbohydrate intake to a single plant source, whether it be oat, wheat, buckwheat or a legume.

Falta[5] of Vienna now assures us that "mixed" carbohydrate treatment may equal the older procedures in its favorable influence on glucosuria and ketonuria. This extends the palatability of the diet in those cases in which this form of diabetic regimen is to be tried. As a rule it seems to be best to use the cereals in the form of gruels or porridges — not in a baked product — the reason presumably being connected with the different alimentary behavior of the two types of food product. Like the advocates of the oatmeal treatment, Falta insists that meat and protein from animal sources should be excluded, and plant protein substituted. The explanation for this is not clear. The contention is made that meat in largest degree interferes with the glucogenesis of the diabetic organism.

It should be borne in mind that these "cereal treatments" are not in the nature of permanent diets, but are merely interspersed in the midst of a fairly strict routine of carbohydrate-free living. This fact has not always been understood by practitioners. Highly advocated tentative dietary methods, whether they involve starvation and alcohol or mixed cereals, deserve intelligent consideration and trial under appropriate conditions. They must not, however, be allowed to overshadow the success of the current methods of diabetic dietotherapy, particularly in cases of only moderate severity; nor should they be permitted to furnish an argument for the unscrupulous vender of diabetic foods which are rich in starch, even though the label may be "within the law."

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[5] Falta, W.: Zur Theorie und Behandlung des Diabetes mellitus, Med. Klinik, 1914, No. 1; Ueber die gemischte Amylazeenkur bei Diabetes mellitus, München. med. Wchnschr., 1914, No. 22, p. 1218.

GOOD HEALTH COMMERCIALLY CONSIDERED

The final report of the Commission on Industrial Relations, created by act of Congress in 1912, has just been issued. While the findings and recommendations of this commission on labor conditions, industrial unrest, workmen's compensation, hours of labor, trade unions and other subjects connected with industrial conditions are of interest, the most important section of the report, from the standpoint of the physician and the sanitarian, is Section 16 on Industrial Conditions and the Public Health. Condensed into six pages are a number of startling statements for the first time given the authority and endorsement of a government commission. Under the direction of an officer of the Public Health Service, investigations were conducted by the commission which revealed the fact that while much attention has been given of late to accident prevention, yet accidents caused only one seventh as much destitution as does sickness. Each of the thirty-odd million wage earners in the United States loses an average of nine days a year through sickness, at an average cost of two dollars a day. The wage loss from this source is over five hundred million, while the added cost of medical care of at least $180,000,000 increases the total sick bill of the wage earners of the United States to $680,000,000 a year. From 30 to 40 per cent. of cases requiring charitable relief are due to sickness, while sickness among wage earners is primarily the result of poverty, causing insufficient diet, bad housing, inadequate clothing and unfavorable surroundings in the home. According to the commission, the surroundings and place of work and the personal habits of the worker are important but secondary factors. This means that while there should be no diminution in our efforts to secure better conditions in the factory, the office and the workship, the real solution of the public health problem lies in the improvement of the home.

Quite as important is the classification made by the commission of disease-causing conditions into three general groups: those for which the employer and the character of the occupation are responsible; those for which the public is responsible, and those for which the individual worker and his family are responsible. It has become a truism in public health work that fixing the responsibility definitely and beyond question is half of the battle for better conditions. The commission regards the employer as responsible for occupational diseases, low wages, excessive hours, work methods causing nervous strain and general insanitary conditions. The public is responsible for housing, water supply, food, drugs and community sanitation. The greatest share of responsibility, however, rests on the individual and, under present conditions, in the opinion of the commission, he is unable to meet this responsibility. The majority of wage earners do not receive sufficient wages to provide for proper living conditions. The present methods of disease prevention and cure are expensive, and sickness is most prevalent among those who are least able to purchase health. The commission does not anticipate any such rapid increase in the wages of all classes of workers as would permit proper living conditions and adequate medical attention, and therefore concludes that new methods of dealing with existing conditions must be adopted, based on the cooperative action of those responsible for these conditions. A system of sickness insurance is proposed as the most feasible single remedy. The right of the federal government to tax industries in a sickness insurance system has been recognized since 1798, when the law taxing registered vessels for the support of the Marine Hospital Service was passed.

An extensive scheme for a federal system of sickness insurance is outlined by the commission providing for a national sickness insurance commission composed of representatives of employers and employees in equal ratio, with the federal commissioner of labor statistics and the surgeon-general of the Public Health Service as ex officio members. It is interesting and encouraging to note, among the most important recommendations of the commission in this direction, that "correlation of the insurance system with the medical profession, the lack of which has been a serious defect in German and British systems, is absolutely necessary." Any one who has followed the development of industrial insurance abroad will admit that the opposition or at least the half-hearted cooperation of the medical profession, owing to the inequitable system of compensation and to the fact that no consideration was given to the medical profession in framing the various insurance schemes, has been a most important factor in the partial failure of these insurance systems. A trained medical profession is absolutely essential for the successful operation of any industrial insurance plan. The terms on which physicians are asked to assist in the operation of such a system should be fair and such as will enable them to do justice to their responsibilities. This has not been true either in England or in Germany. More than this the physician does not ask. Less than this he should not be expected to accept. The recommendations of the commission on sickness insurance and on the improvement of health conditions among wage earners are worthy of the most careful consideration both by employers and by labor unions.

THE OCCURRENCE OF CREATININ IN PLANT PRODUCTS

Physiologists ordinarily associate creatin and creatinin with animal products. Among animal tissues and organs, there is a marked inequality in the distribution of these specific compounds. They preponderate in the muscles to an extent which makes the other sources seem quite inconsiderable. For example, recent analyses by Janney and Blatherwick[1] give comparative figures in one species as follows, in terms of milligrams per hundred grams of organ: muscle, 470; brain, 114; testes, 181; pancreas, 18; liver, 20; kidney, 14; spleen, 30. Even among animal species, the occurrence of creatin in muscle is not an invariable feature, for it is entirely wanting in the contractile tissues of invertebrates, such as the shellfish which we eat.

For some time the creatinin output in the urine has been looked on as an index, in some degree, of the endogenous metabolism of vertebrates, and of man in particular. In order to estimate this factor, it is, of course, essential that the diet shall be free from creatin and creatinin, which may reappear in the kidney output as products of exogenous origin. Accordingly, it has been customary to secure the appropriate dietary for estimations of endogenous creatinin output by excluding meat and other animal tissues from the ration. Vegetarianism has been assumed to furnish the appropriate diet here required.

Though much has been written on the relations of creatin and its derivatives or precursors to animal tissues and processes in biochemistry, the possibility of its occurrence outside of the animal kingdom has not been considered to any great extent until recently. Shorey[2] found creatinin in extracts of soils. The interpretation of this discovery was not easy, owing to the fact that the formation of creatinin in bacterial cultures in peptone mediums had previously been reported. It might, therefore, owe its origin to the agency of soil bacteria acting on nutrient products in the earth used. Sullivan[3] has called attention to the fact that most commercial nutrient "peptone" is of animal origin and may contain antecedent products which readily yield creatinin. He has, however, demonstrated that a trace of soil added to protein-free synthetic culture mediums may still give evidence of the formation of creatinin by micro-organisms.

The possibility that plants may furnish the creatinin found in soils was realized by Sullivan,[4] who found it in the vegetable kingdom for the first time in 1911. He detected it in wheat seeds and seedlings, in rye, clover and alfalfa seeds, in mature cowpea plants and in potato tubers. From the fact that creatinin was present in larger proportions in recently cropped soils, it was assumed that the presence of creatinin there is associated in some way with plant growth.

Quantitative data have recently been furnished by Sullivan.[5] Only a few parts of creatinin per million were found in the ungerminated seed of wheat and soy bean; but during germination the quantity may increase up to 65 parts per million. Japanese investigators have reported the presence of creatinin likewise in the seeds of the Adzuki bean, the kidney bean, the horse bean and green peas, and have identified the product by dependable isolation methods.[6] As has happened before in physiology, these facts serve to indicate that the relationships between animals and plants in respect to fundamental biochemical processes are closer than it was customary to believe before the advent of modern chemical investigations. From the standpoint of their bearing on diet problems, the quantities of creatinin in plants are probably far too small to command much attention. A growing knowledge of how it arises and what becomes of it in the plant economy may nevertheless help in the future to throw light on the still vexed questions of creatin-creatinin metabolism in man.

Current Comment

A THERAPEUTIC ABSURDITY

In the Propaganda department of this issue is another report of the Council on Pharmacy and Chemistry on the widely advertised products—"Lactopeptine" and "Elixir Lactopeptine." These preparations are supposed to contain, as their two main ingredients, pepsin and pancreatin and this, in the light of present-day knowledge, brands these products — especially the elixir — as therapeutic absurdities. It is axiomatic that pepsin and pancreatin are never indicated at one and the same time and it is practically impossible for the two substances to act together; in fact, in a liquid medium the ingredients are mutually destructive. Eight years ago The Journal published the results of an investigation showing that Lactopeptine contained "but small amounts of pepsin," and "neither diastase nor pancreatin"; two years ago another report was published confirming the earlier one. The present report still further clinches the previous findings. It is worthy of note that the manufacturers in protesting against this report have uttered not a word in defense of the "Elixir Lactopeptine," although, in probably nine out of ten prescriptions for Lactopeptine, it is the elixir that is called for. The reason for ignoring their most widely used product is evident—Elixir Lactopeptine is an indefensible therapeutic and pharmacologic absurdity. The company in its protest, however, does claim that tryptic activity can be found in fresh specimens of Lactopeptine powder and Lactopeptine tablets. Further investigation, made after this protest was received, showed that while a few specimens of Lactopeptine in the dry form possessed some—therapeutically negligible—tryptic activity, there was no activity whatever in most of the specimens examined. Briefly, the facts regarding this "ethical proprietary" may be summed up thus: (1) Lactopeptine, whether in the form of an elixir, powder or tablets, is a therapeutic absurdity. (2) Lactopeptine in the dry form (powder or tablets) may, when strictly fresh, possess some slight—although therapeutically negligible—tryptic activity, a fact that is of merely academic interest because pepsin and pancreatin are never indicated at the same time. (3) Even if fresh specimens have any advantage over the old, there is no way of telling which the patient is likely to get, as the trade packages of Lactopeptine are undated. (4) The form in which Lactopeptine is usually prescribed is the "Elixir," a liquid preparation in which the pancreatin and pepsin destroy each other. (5) Lactopeptine has not the composition claimed for it and if it did have, it would still be of no value.

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[1] Janney, N. W., and Blatherwick, N. R.: The Quantitative Determination of Creatine in Muscle and Other Organs, Jour. Biol. Chem., 1915, xxi, 567.

[2] Shorey, E. C.: Science, 1911, xxxiii, 340.

[3] Sullivan, M. X.: The Formation of Creatinine by Bacteria, Science, 1915, xlii, 69.

[4] Sullivan, M. X.: Jour. Am. Chem. Soc., 1911, xxxiii, 2035.

[5] Sullivan, M. X.: The Amount of Creatinine in Plants, Science, 1915, xlii, 69.

[6] Oshima, K., and Ariizumi, M.: On the Occurrence of Creatinin in Leguminous Seeds, Jour. Coll. Agric., Sapporo, 1914, vi, 17.

THE N. F. IMITATION OF ELIXIR LACTOPEPTINE

Nearly forty years ago — to be exact, in 1876 — the essential worthlessness of Lactopeptine was brought to the attention of the pharmaceutical profession. This was done in a paper, contributed to the American Pharmaceutical Association by Prof. Emil Scheffer, reporting some experiments made with Lactopeptine and proving that it had no greater digestive value than the saccharated pepsin then in vogue. This paper, which appeared in the Proceedings of the American Pharmaceutical Association, was called to the attention of The Journal's readers by the president of the American Pharmaceutical Association[1] soon after the appearance of the Council's first report on Lactopeptine.[2] When scientific fact runs counter to popular fancy, and especially when popular fancy is supported by heavy advertising, science inevitably gets the worst of it. This is what occurred in the Lactopeptine matter, for Professor Scheffer's paper was ignored by pharmacists and was not brought to the attention of physicians. Not only did an extensive advertising campaign force Lactopeptine and Elixir Lactopeptine into popular favor, but the very demand thus created was an inducement for druggists to imitate the products. As a result, we find the Compound Powder of Pepsin and also Compound Digestive Elixir in the National Formulary. Compound Digestive Elixir, as manifestly worthless as its prototype, Elixir Lactopeptine, has, like its prototype, proved to be a "good seller." It is not surprising to find a journal devoted to the business rather than the professional side of pharmacy (*N. A. R. D. Journal*) earnestly defending the Compound Digestive Elixir on the ground that "physicians keep right on prescribing it, and they say they get the results they are looking for, and what more does any one want?" Even more naively the *N. A. R. D. Journal* goes on to argue that "while the action of one or more of the ingredients in the N. F. formula may be 'killed,' as some writers have expressed it, and that, therefore, the presence of such is superfluous, it has never been mentioned what the resulting compound will be, nor what its therapeutic action." Thus the druggist is invited to emulate the followers of Mrs. Eddy in substituting for inconvenient knowledge a cheerful faith which seeks not to dissolve a profitable mystery. Pharmacists should not be too severely blamed, however, for adopting such an attitude; manufacturers and dealers in drugs are, after all, merchants, whose profits are in a general way directly proportionate to the amount of goods they sell. The pharmaceutical profession, however, will do well to remember that pharmacists themselves will suffer in the end from the reaction in the minds of the medical profession and the public if they persist in disregarding what they know to be true for the sake of what they find to be profitable.

ALABAMA OPTOMETRY BILL VETOED

During its recent session, the Alabama legislature passed a law providing for a board of optometry examiners. The opposition was largely disarmed, owing to the fact that, at the last meeting of the medical society of the state of Alabama, through a general misunderstanding, this bill was recorded as receiving the endorsement of the state association. When it went to Governor Henderson, the facts regarding the measure and its dangers to the public were placed before him, and in spite of considerable pressure he wisely refused to permit it to become a law. Usually the advocates of these measures are able to secure a considerable amount of political backing and influence. The endorsement of the state association, however secured or through whatever misunderstanding it may have occurred, only increased the difficulty of the governor's position. Probably most state executives under these circumstances would have felt fully justified in signing the bill. These facts only increase the appreciation of Governor Henderson's independence and courage in refusing to allow this measure to become a law. In the ten years in which this question has been before legislatures, some definite principles thereon have been evolved. Beyond question, the public is in danger of being imposed on and injured by dishonest or incompetent spectacle fitters. Unquestionably, if in the opinion of the legislature this is a question of sufficient importance to demand regulation, there should be adequate regulation of those who follow this business. It is true that too little time is given to the instruction of medical students on this subject, and that to become a competent oculist or ophthalmologist requires postgraduate instruction. These facts have all been taken advantage of in promoting the passage of optometry bills in the various states. But it does not follow that the only remedy or best remedy is the creation of a separate, independent board of "optometrists" and the legal recognition of a pseudoscientific sect, which, by its incompetent encroachment on the field of medical practice, will do quite as much, if not more, harm to the public than the unregulated spectacle fitter. Each of our states has a state board for the examination and licensing of physicians. A bill extending the powers of the medical examining board, authorizing it to examine, either directly or through an appropriately constituted examining committee, those desiring to fit glasses, to issue to them a proper license to do so and to prevent all unlicensed persons from preying on the public, would meet all the indications as far as public safety is concerned, and would avoid the evils and dangers of a separate board.

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[1] The Journal A. M. A., April 6, 1907, p. 1198.
[2] The Journal A. M. A., March 16, 1907, p. 959.

"CARDUI: THE STORY OF A NOSTRUM"

Those who have followed The Journal's articles on "Wine of Cardui" and are conversant with the fact that the suits resulting from the exposures have resolved themselves into a fight by the combined "patent medicine" interests of the country against the American Medical Association will read with interest an article that appears in the current (October 23) issue of *Harper's Weekly*. This article, under the title quoted above, is announced as the first of three to appear in *Harper's* on the subject of "Wine of Cardui" and "Black Draught," two nostrums put out by the Chattanooga Medicine Company. These articles are written by a Dr. Bicknell, who is said to have been in the employ of the Chattanooga Medicine Company for some years as their chemist. Certainly the details he gives indicate a familiarity with the business that could be expected only from one who had been employed in some such capacity. The current article traces the growth of the Wine of Cardui business, and illustrations are used to show the evolution of the nostrum label from "Nature's Great Emmenagogue" to "20 Per Cent. Alcohol." While the author denies that the Chattanooga Medicine Company's nostrum will perform the many wonders claimed for it by its manufacturers, he says "there is one miracle that Cardui can perform—a miracle quite as wonderful, perhaps, as the regulation of the menstrual function; it can make money." According to Bicknell, Wine of Cardui contains blessed thistle and an insignificant amount of black haw. These herbs, says the author, "whatever their life-giving potentialities, are at least conveniently inexpensive." Then follows a computation of the cost of making and marketing a gallon of Wine of Cardui. This shows that the contents of each bottle "cost a trifle over 4 cents." For the bottle, corks, labels, carton, packing case, etc., he computes an amount that makes the cost of a bottle of Wine of Cardui, packed ready for shipment, total a little less than eleven cents. To this he adds the "patent medicine" maker's largest item of expense, advertising, bringing up the total gross cost of the nostrum to a trifle under 26 cents a bottle. It sells for $1.00 a bottle. These statements prepare one for the claim made by Dr. Bicknell that during the past year "the *net profit* of the year's sale of Cardui amounted to $949,200.00!" These figures are enlightening. They help one to understand the lavish expenditure of money that followed the filing of the suits by the Chattanooga Medicine Company against The Journal and its editor. Those engaged in a business whose *net* profits were even one-half million dollars annually are not likely to be over particular in the methods of defending the business. The fact that the two and a half million dollars, representing the gross sales, based on the Bicknell figures, comes out of the pockets of those who can least afford it, is but an incident in a sordid business.

THE DEATH OF A GREAT NATURALIST

Henri Fabre has just died at his home in France. Only toward the close of his long, laborious life had the careless world begun to realize that in this unpretentious son of peasants, waging a heartbreaking struggle against grinding poverty and humiliating neglect, it had been ignoring a unique genius. For this long failure to obtain fitting recognition there were many reasons. Fabre possessed none of the arts of the self-advertiser. Entomology, when he embraced it as a career, was a neglected science, and the phase of it to which he intuitively turned, the study of instinct, was especially neglected. Then, too, though versed in several sciences, Fabre was impatient of booklore in his own field and refused to bow to the theories of the day, preferring to interrogate Nature alone. Finally, it may be that even his delightful prose, with flashes of fancy and quaint humor, inspired in the Gradgrinds of science a certain distrust. This distrust, if it existed, Fabre was at no pains to allay, for he declared that he hated the barbarous jargon which made science so thorny and repellant to the young. In his youth Fabre felt a strong inclination toward medicine. Had he followed that inclination, he surely would have made notable contributions to medical science. As Legros says, he had in high degree "that gift, properly speaking poetic, which is known as the clinical eye, which at the first glance perceives and confirms the diagnosis in all its detail." He also had the gift of untiring observation, the thirst for knowledge, the capacity for unlimited work and the illuminating imagination which mark the scientific discoverer. Yet we can scarcely reproach the fate which gave his faculties their own peculiar trend. Darwin styled him "the inimitable observer"; Maeterlinck called him "one of the most profound and inventive scholars . . . one of the purest writers, and . . . one of the finest poets of the century that is just past"; Edmond Rostand characterized him as "this great scientist, who thinks as a philosopher, sees as an artist, and feels and expresses himself as a poet."

A JOURNAL OF LABORATORY MEDICINE

The *Journal of Laboratory and Clinical Medicine* is a new venture in the field of medical journalism. As the title indicates, the journal is to be devoted to the laboratory in its relation to medicine and surgery. Its object is to publish reports of recent discoveries made in research institutions, and to suggest to the practitioner how he may apply these discoveries in his daily work. The first function is to be fulfilled by original contributions, the second by editorials contributed by the editorial staff; several pages are also to be devoted to laboratory methods. Dr. Victor C.

Vaughan is the editor-in-chief, and the associate editors are: Drs. Dennis E. Jackson, St. Louis; Frederick P. Gay, San Francisco; Hans Zinsser, New York; Paul G. Woolley, Cincinnati; J. J. R. MacLeod, Cleveland; Roy G. Pearce, Chicago, and Roger S. Morris, Cincinnati. The journal takes advertising, but makes the following announcement: "The advertising policy of the journal will conform to the standard set by the Council on Pharmacy and Chemistry of the American Medical Association." Among the contributors to the first number are: Drs. Dennis E. Jackson, St. Louis; Frederick P. Gay, San Francisco; George Dock, St. Louis; Roger S. Morris, Cincinnati; Martin E. Engman, St. Louis; Louis B. Wilson, Rochester, Minn., and Paul G. Woolley, Cincinnati. The first number is creditable to all concerned.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Staff Physicians Appointed.—The boards of control of the state charitable institutions, on September 23, elected Dr. William T. McCurry, Little Rock, oculist for the Arkansas Deaf Institute and the Arkansas School for the Blind, Little Rock; Dr. Luther D. Reagan, physician for the School for the Blind, and Dr. Sherman B. Hickman, physician for the Deaf Mutes Institute.

Free Treatment.—The Pope County Medical Society at its meeting in Russellville, October 6, held a series of free clinics.——Plans are under way for the three-story hospital and clinic building to be erected in the rear of the Medical College, Little Rock. The hospital is being constructed with the $20,000 and interest of the Dr. Isaac Folsom Free Clinic Fund founded about fifteen years ago.

CALIFORNIA

State Medical Society Meeting.—It is announced that the Medical Society of the State of California will hold its annual meeting in Fresno, in April of next year.

Quack Indicted.—"Dr." S. R. Chamley, the "Cancer Specialist," is reported to have been indicted by the grand jury in San Francisco, recently, but had disappeared when detectives were sent to arrest him. He is said to have charged a patient $2,300 for an operation for cancer when, as testified by witnesses, he knew the patient had no cancer "but meant to get all the money he could."

Going After the Irregulars.—The State Board of Medical Examiners announces that it will start an aggressive campaign in southern California directed particularly against the advertising "quacks" and other individuals who prey on the credulous public. It is intended to eradicate from the southern section of California the flagrant violators of the medical practice act who have heretofore openly defied regulation.

COLORADO

Medical Reserve Corps Officers Meet.—A meeting of all Denver physicians who are on the inactive list of the Medical Reserve Corps of the Army was held October 11 in the office of Dr. William W. Grant, for organization and to study the correspondence courses which have recently been authorized by the war department.

Personal.—Dr. William A. Jolley, Boulder, formerly major in the Medical Corps of the Colorado National Guard, who has been in service with the American Red Cross in Belgrade, returns home this month.——The resignation of Dr. William P. Harlow, dean of the medical school of the University of Colorado, Boulder, has been presented to the board of regents.——Dr. Samuel R. McKelvey, Denver, has been appointed secretary and executive officer of the State Board of Health.——Dr. James W. Purcell, Denver, who has been seriously ill for ten months, is reported to be convalescent.

New State Society Officers.—At the annual meeting of the Colorado State Medical Society held in Denver, October 5 to 7, under the presidency of Dr. George B. Packard, Denver, the following officers were elected: president, Dr. John R. Espey, Trinidad; vice presidents, Drs. Chauncey E. Tennant, Denver; Jesse U. Sickenberger, Grand Junction; William A. Kickland, Fort Collins, and Henry W. Averill, Evans; councilors, Drs. Will H. Swan, Colorado Springs, second district, and Hampton S. Henderson, Grand Junction, fourth district; delegate to the American Medical Association, Dr. Lewis H. McKinnie, Colorado Springs; and alternate, Dr. George A. Moleen, Denver. Glenwood Springs was selected as the next place of meeting.

GEORGIA.

Dinner to Dr. Murray.—In honor of Dr. George S. Murray, Columbus, who left September 23 to serve in the Medical Corps of the British Army at the front, the Muscogee Medical Society gave a dinner, September 21.

Battey Bust Presented.—A marble bust to the late Dr. Robert Battey, Rome, was presented to the Wesley Memorial Building of Emory University by Mrs. Martha Smith Battey. The ceremony took place October 15. Dr. George H. Noble, Atlanta, presented the bust on behalf of the family and Bishop Warren A. Candler, chancellor of the university, made the address of acceptance.

ILLINOIS

State Antituberculosis Meeting.—The seventh annual meeting of the Illinois Association for the Prevention of Tuberculosis will be held in Danville, October 23, in conjunction with the meeting of the state conference of charities.

Personal.—Dr. William Jayne, Springfield, who is still prominent in business life and is a director in the First National Bank, recently celebrated his eighty-ninth birthday anniversary.——Dr. J. H. Riley, DeKalb, is reported to be seriously ill.

Chicago

Needs of Psychopathic Hospital.—The advisory attending staff of the Psychopathic Hospital, after an investigation of the needs of the institution, recommend that more beds are needed and that the hospital shall be so arranged that patients can be segregated according to their diseases.

Tuberculosis Expert Gives Clinic.—Dr. Francis M. Pottenger, Monrovia, Calif., gave a clinic and demonstration in the amphitheater of Rush Medical College, October 16, on "Tuberculosis," under the auspices of the Rush Medical College Ambulatorium of the Chicago Municipal Tuberculosis Sanatorium.

INDIANA

Disease Prevention Day.—The second annual observance of Disease Prevention Day in Indiana, October 1, was a marked success.

Test Case.—O. L. Burgener, a chiropractor, is being tried in Indiana for practicing medicine, surgery and obstetrics without a license. The charge was filed by Dr. William T. Gott, Crawfordsville, secretary of the Indiana State Board of Medical Examiners.

Personal.—Dr. William N. Wishard, Indianapolis, is reported to be seriously ill with septicemia.——Dr. Edwin W. Poinier, Andrews, has been appointed physician of Huntington County, succeeding Dr. William R. Beck.——Dr. George H. Hockett, Anderson, is recovering after a tonsillectomy.——Dr. David L. Kahn, Indianapolis, has been appointed local surgeon for the Lake Erie and Western Railway, succeeding Dr. Paul F. Robinson, Indianapolis, resigned.——Dr. J. McLean Moulder, [illegible] accepted the superintendency of the new [illegible] hospital, Kansas City, Kan.——Dr. John P. Franz, Indianapolis, was painfully injured in a collision between his automobile and a street car, recently.

KENTUCKY

Personal.—Dr. Granville S. Hanes, Louisville, is seriously ill with septicemia as the result of an infection of the finger. The axillary glands became infected and were removed, October 11.

Dinner to Dr. Vance.—A dinner was given to Dr. Ap Morgan Vance by the Medico-Chirurgical Society of Louisville, October 14, at the Tavern Club, to celebrate the election of Dr. Vance to the presidency of the Kentucky State Medical Association.

MAINE

Personal.—Dr. Theodore E. Hardy, Waterville, has had conferred on him the honorary degree of A.M. by Colby University, Waterville.

New Sanatoriums.—An order was passed by the governor, September 1, providing for the purchase of the Hebron Sanatorium for Tuberculosis at a cost of $15,000 and for the purchase of the Fairfield Institution, at the same figure. The former institution will be known as the Western Maine Sanatorium, and the latter as the General Maine Sanatorium.——Dr. Theodore E. Hardy, Waterville, has been elected president of the board of trustees of the state sanatoriums and Dr. Olin S. Pettingil, Wallum Lake, R. I., assistant superintendent of the Rhode Island Sanatorium, has been offered the position of superintendent of the Hebron Institution.

MARYLAND

Typhoid in Maryland.—During the month of September, 609 cases of typhoid fever occurred in Maryland, according to reports made to the State Department of Health. Of these, 186 were reported in Baltimore, the remainder being distributed throughout the counties. Baltimore County leads the list, 68 cases having been reported from there. Of the towns outside of Baltimore, Cumberland had the largest number of cases, 13 being reported. There were 6 cases in Annapolis.

Surgeons Tell of War Abroad.—War experiences of Baltimore surgeons in German, French and English hospitals were related recently at the regular meeting of the Baltimore City Medical Society. The subject of the evening was "Medical Lessons of the War." Dr. Henry N. Shaw, Baltimore, stationed in England; Dr. Robert H. Crawford, stationed at the American Red Cross Hospital at Glerwitz, Galicia, and Dr. John A. C. Colston, recently from Pau, France, were among the speakers.

Cost of Mosquito War.—The campaign against mosquitoes closed recently. It cost the city of Baltimore about $25,000, and is said to have been successful. William D. Wrightson of the Public Health Service said that the inspecorts had found two kinds of malarial fever mosquitoes in Baltimore, in addition to the ordinary culex, or domestic insect. It is thought that the campaign will be made a part of the work of the health department, which may have a sanitary engineer added to its staff.

Personal.—The State Board of Health has appointed Dr. C. Hampson Jones, assistant commissioner of health of Baltimore for nearly twenty years, chief of the bureau of communicable diseases in the State Health Department. Dr. Jones will take charge of the bureau November 1.——Dr. Frank J. Powers, Baltimore, has been appointed by the mayor physician to the city jail, to succeed Dr. George L. Wilkins, who for fifteen years had held this position.——Dr. Nathaniel G. Keirle, chief of the Pasteur department of Mercy Hospital and city medical examiner, passed his eighty-second birthday, October 10.

Hopkins Extends Work.—An important branch of the department of pathology in the Johns Hopkins University, to be devoted entirely to research work, will be opened within the next six weeks in the pathologic building, after Dr. William H. Welch returns from China. Dr. Welch is chief pathologist of the university and is now in the Far East on work for the Rockefeller Foundation. The rooms to be occupied in the new work have been equipped with scientific appliances and instruments costing several thousand dollars. A fund aggregating $22,000 has been raised for supporting the work for three years. At the end of this time a larger endowment will be necessary. In the absence of Dr. Welch, Dr. Milton C. Winternitz, his first assistant, has been directing the work. Dr. Welch will probably name the director soon after his return. It is probable that the director of the laboratory will have two assistants. All branches of research work in pathology will be followed. This includes bacteriology, immunology, and problems arising from postmortem examinations.

MISSOURI

Personal.—Dr. William P. Camp, Springfield, is reported to be critically ill at his home.——Dr. D. R. McCue, Trenton, a member of the State Board of Pardons and Paroles, has resigned.——Dr. Leroi Beck, South St. Joseph, was seriously injured by the overturning of his automobile while making an emergency call, September 4.

Chiropractors Barred.—The Missouri State Board of Health has ruled that chiropractors have no legal standing and are open to prosecution for practicing as physicians without a license.

Health Lectures of State Fair.—At the State Fair, Sedalia, September 25 to October 2, a program of lectures on public health topics was aranged under the auspices of the Missouri State Medical Association and the state commissioner of food and drugs. The program included addresses by Dr. Robert M. Funkhouser, St. Louis, on eugenics; Mr. F. H. Fricke, state pure food and drug commission, on food and drugs; Dr. Robert E. Schlueter, St. Louis, on cancer; Mr. H. E. Wiedeman, state chemist, household tests; Dr. Frank G. Nifong, Columbia, on the economic value of medical science and its service to the world today; Dr. Mazyck P. Ravenel, Columbia, on "Every Man His Own Life Insurance Agent"; Dr. Francis H. Matthews, Liberty, on contagious diseases; Dr. Guy Titsworth, Sedalia, on how to keep the eyes well. Motion pictures on health protection were shown after each lecture.

St. Louis

Bartlett's Guests.—Dr. William J. Mayo, Rochester, Minn.; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Richard H. Harte, Philadelphia, and Dr. Donald C. Balfour, Rochester, Minn., were guests of Dr. Willard Bartlett on October 11. The visitors were making a trip down the Mississippi River in Dr. Mayo's yacht.

Biologic Research.—Note has previously been made of the expedition undertaken under the auspices of St. Louis University for the purpose of establishing a biologic research station in British Honduras. The preliminary survey which was made by Dr. Edward N. Tobey, Dr. John P. Coony and Mr. Alphonse M. Schwitalla was unfortunately saddened by the tragic loss of the United Fruit Company's steamer *Marowijne* with Dr. Tobey on board as has been already reported. As for the results of the expedition, Mr. Schwitalla reports that a detailed program can now be submitted to the university for the prosecution of research in those regions. It is clear that a great abundance of material can be found for studying some of the outstanding problems connected with malaria and uncinariasis. A large amount of material can also be obtained for studying pinta, sprue, climatic bubo, and the so-called "tropical ulcers." In several cases it was suspected that fevers of hitherto undescribed character have been encountered. During this year's trip only the coast towns were visited. The villages of the interior are sure to yield even richer results. Altogether it may be considered as certain that a further study of this promising field will yield results that will be beneficial not only to the people of those regions but will also prove a distinct advance in tropical medicine.

NEW HAMPSHIRE

New Officers for State Surgeons.—At the annual meeting of the New Hampshire Surgical Club, held in Hanover, October 8, Dr. William H. A. Lyons, Manchester, was elected president; Dr. George C. Wilkins, Manchester, vice president, and Dr. Charles E. Congdon, Nashua, secretary-treasurer.

Dartmouth Alumni Elect.—At the annual meeting of the Dartmouth Medical Alumni Association held in Hanover, October 8, under the presidency of Dr. Elmer H. Carleton, Hanover, the following officers were elected: president, Dr. Elmer H. Carleton, Hanover (reelected); vice presidents, Drs. Alexander A. Beaton, Franklin, and Walter A. Bartlett, Manchester; and secretary-treasurer, Dr. Howard N. Kingsford, Hanover.

NEW JERSEY

Medical Talks to Pupils.—Arrangements have been made by the board of education of Montclair to have lectures to be given to the pupils of the evening schools of the city on hygiene, first aid, etc.

State Board Sustained.—The Supreme Court of New Jersey in a decision rendered Oct. 6, 1915, partially sustained the State Board of Medical Examiners in refusing to license "graduates" of the New Jersey College of Osteopathy in regard to which it was charged that diplomas had been sold at from $25 to $300 each.

Personal.—Dr. Edward Guion, for twelve years chief of the Bureau of Health of Atlantic City, has resigned to enter private practice.——Dr. John C. Felty, first assistant to the medical superintendent of the New Jersey State Hospital for the Insane, Trenton, who has been a member of the medical staff of the hospital for twenty-five years, resigned and relinquished his duties, October 4, and will make his home in Gettysburg, Pa. A dinner was given in honor of Dr. Felty, at the Country Club, October 4, at which he was presented with a clock.——Dr. Edgar B. Funkhouser has succeeded Dr. Felty.

NEW YORK

Psychopathic Ward.—The finance committee of the Buffalo Common Council has recommended that Health Commissioner Francis E. Fronczak be authorized to spend $2,000 in fitting out a ward in the East Ferry Street Hospital, Buffalo, for alcoholics and persons suspected of being of unsound mind.

Sanatorium Opened.—The J. N. Adam Memorial Hospital, Perrysburg, was formally opened October 9. This institution has been erected at a cost of $120,000 and is under the charge of the Buffalo Association for the Relief and Control of Tuberculosis. At the opening exercises the work of the schoolchildren of Buffalo, who raised $10,000 for the institution, will be commemorated by the unveiling of tablets.

New York City

Correction.—In the personal items of the issue of October 9, it was stated that Dr. and Mrs. H. Holbrook Curtis had sailed for Europe. Dr. Curtis telegraphs that it is a misstatement.

"Safety First" Shows Results.—A report compiled by the Safety First Society states that during September, 1915, there were only twenty-eight deaths from accidents involving vehicles in Manhattan as against forty-nine for the same month of 1914. Motor vehicles of all types killed eighteen persons last month, as against thirty in September, 1914.

Four Anthrax Cases.—During the past three weeks there have been four deaths from anthrax in this vicinity. The most recent, that of Mr. Stackpole, has excited much public interest because he was treated with the new serum prepared by A. Eichhorn of the Bureau of Animal Industry and lived for about a week after the disease manifested itself.

Changes in the Medical Faculty at Columbia.—Dr. Francis R. Fraser has been granted leave of absence while rendering service with the French army. Dr. Francis Carter Wood has been elected by the medical faculty to be delegate to the university council for the unexpired term of Dr. M. Allen Starr, retired. It is announced by the trustees of the university that the registration in the medical department is 345 as against 323 last year.

Many Shops Still Sell Wood Alcohol.—An investigation by the health department of 2,400 places in which it was suspected that wood alcohol was being sold has brought to light the fact that 764 shops were selling wood alcohol not properly labeled. Of these places, 466 were drug stores and saloons and the others were paint shops. The result of the discovery that so many shops were using and selling wood alcohol illegally has caused the health department to issue a warning to citizens against the use of any alcohol that is not properly labeled.

Health Department Encourages Use of Schick Test.—The bureau of laboratories of the health department announces that it is prepared to supply an outfit for applying the Schick test which will make the application of the test a simple procedure for the general practitioner. This outfit consists of a capillary tube and a small rubber bulb, such as is employed in the distribution of vaccine virus, and a bottle containing 10 c.c. of sterile physiologic saline solution to which 0.025 per cent. phenol has been added. The capillary tube contains one minimum lethal dose (for the guinea-pig) of undiluted diphtheria toxin. The outfit is accompanied by directions for its use and the health department believes that it will be found both convenient and reliable.

NORTH CAROLINA

Dairy Inspection Inaugurated.—Greensboro is inaugurating a system of dairy inspection including the publication from month to month of the standing of the respective dairies which supply milk to the city.

Personal.—Dr. Samuel Westray Battle, Asheville, sailed for England, October 4.——Dr. John Thames, Wilmington, assistant county health officer of New Hanover County, has been completely exonerated on the charge of official negligence, recently preferred against him.

The Murphy Memorial.—The P. L. Murphy Memorial Association, of which Colonel P. M. Pearsall, Newbern, is secretary, has issued in book form the addresses made on the occasion of the presentation of the portrait of the late Dr. Patrick Livingston Murphy to the state library, Raleigh, and on the dedication of the bronze memorial tablet to Dr. Murphy at the State Hospital for the Insane, Morganton.

Deaver in Charlotte.—Dr. John B. Deaver, Philadelphia, was entertained at luncheon at the Charlotte Sanitarium by Dr. Edward C. Register, September 22, and at dinner by the Mecklenburg County Medical Society at the Country Club in the evening. During the day Dr. Deaver gave clinics at the Charlotte Sanitarium and the Presbyterian and other hospitals of the city. In the evening he delivered a lecture on "Symptoms of Disease in the Upper Abdomen."

Health Officers Confer.—The four recently installed whole-time county health officers, Drs. Darius C. Absher of Henderson, Vance County; Milton T. Edgerton of Greenville, Pitt County; James C. Braswell of Nash County and Eugene R. Hardin of Clinton, Sampson County, met at Raleigh, September 18, at the office of the State Board of Health, to arrange uniformity of system and method in the control of infectious diseases in their respective counties.

Hospital Notes.—Dr. Addison G. Brenizer, Jr., has leased the old Brenizer Home in Charlotte and will establish a private hospital in the building.——Contracts have been let at Tarboro for the Edgecombe County General Hospital.——Drs. William P. and Charles R. Reaves, Greensboro, are building a three-story and basement building which will be ready in a short time. The basement will be given over to the treatment of colored patients; the first floor will be used for offices and the third floor as an infirmary for white patients.——Miss Lorene Johnson, Statesville, has leased the Billingsley Hospital and will conduct it for the benefit of patients of all physicians of the city and county.

PENNSYLVANIA

Personal.—Dr. Walter J. Cathrall, South Bethlehem, after an illness of eleven months contracted in the United States government service in the Far East, is again able to resume his practice.

Dedication of Hospital.—The dedication of the Elizabeth Steel Magee Hospital and the conferring of honorary degrees by the University of Pittsburgh will take place in Memorial Hall, that city, October 27. There will be a number of addresses relating to the hospital and its founder, Christopher Lyman Magee, and an address on "The Teacher's Inheritance" by Dr. William Walter Chipman of Montreal, after which the degrees will be conferred. The new hospital, located at Forbes and Halket streets, will be inspected in the afternoon and there will be a dinner at the Hotel Schenley in the evening.

Optometrists to Fight.—The institution of mandamus proceedings to test the legality of Governor Brumbaugh's veto of the house bill creating a separate board for licensing optometrists, was the principal topic of discussion before the annual convention of the optical society of Pennsylvania, which opened its meetings at the Hotel Adelphia, Philadelphia, October 12. Although their reason for fighting the veto is to escape the domination of the state medical board of optometrists, they base their fight on a technicality. It is their contention that the governor vetoed the bill after the ten day limit allowed for vetoes and that the bill, therefore, became law automatically.

Philadelphia

Personal.—Dr. John B. Carnett, who has been seriously ill for four months, is convalescing.——Dr. Malcolm C. Grow is now en route to Archangel to serve in a Russian military hospital.——Dr. Luther C. Peter has been made associate professor of diseases of the eye in the Philadelphia Polyclinic.——Dr. William B. Swartley has just gone on service for three months at the American Ambulance Hospital at Paris.——Dr. Charles H. Frazier was elected president of the Mask and Wig Club of the University of Pennsylvania, October 13.——Dr. Daniel J. McCarthy, professor of medical jurisprudence in the University of Pennsylvania, has returned from the American Ambulance Hospital in Paris and will make a report on the influence of the war on the nervous system and mental future of the soldiers, the result of high explosives and other problems of scientific interest to the medical profession.

WISCONSIN

New State Officers.—At the annual meeting of the State Medical Society of Wisconsin, held in Milwaukee, October 5 to 7, under the presidency of Dr. Theodore J. Readelings, Marinette, the following officers were elected: president, Dr. Louis F. Jermain, Milwaukee; vice presidents, Drs. Michael R. Filkinson, Oconomowoc; Mathew S. Hosmer, Ashland, and Robert W. Blumenthal, Milwaukee; secretary, Dr. L. Rock Sleyster, Waupun (reelected); treasurer, Dr. Sidney S. Hall, Ripon; delegate to the American Medical Association, Dr. Thomas H. Hay, Stevens Point; alternate, Dr. L. Rock Sleyster, Waupun; delegate to the National Legislative Council, Dr. Gustave Windesheim, Kenosha; delegate to the council on medical education, Dr. Arthur J. Patek, Milwaukee.

CANADA

Personal.—Lieut.-Col. Henry R. Casgrain, Windsor, Ont., in command of one of the stationary hospitals in Egypt or the Dardanelles, is seriously ill at Alexandria.——Dr. Henry J. Stephens, London, Ont., has been appointed medical officer of the Seventieth Overseas Battalion.——Drs. Jim B. Jupp and Samuel M. McLay, Woodstock, Ont., have joined the Royal Army Medical Corps.——Surg.-Gen. George A. S. Ryerson was the guest of honor at the first regular monthly dinner of The Aesculapian Club, Toronto, the evening of October 14. Dr. Ryerson was the founder of the society. He gave a very interesting address on his recent trip to northern France, recounting many striking incidents.——The American consul in Toronto, Dr. Julius D. Dreber, was recently banqueted by members of the American colony in that city at the American Club.

Ontario Medical Inquiry Under Way.—The preliminary hearing of the government commission relative to medical education and practice in Ontario was held in Toronto, October 16, but after a half hour's session adjourned until Thursday, Friday and Saturday, October 21, 22 and 23. The chiropractors will be heard at the Thursday session. There were about 200 medical men at the session. The Academy of Medicine, Toronto, was represented by the president, Dr. William H. B. Aikins, and treasurer, Dr. William A. Young. The academy will act with the Ontario Medical Council whose solicitor is Mr. H. S. Osler, K. C. The Ontario Medical Association is represented by Dr. Richard A. Reeve. The University of Toronto was represented by President Falconer and Mr. J. B. Clark, K. C. It is understood that the university will take the stand that all shall take a prescribed course of four years and practice whatsoever method of therapeutics they may choose.

Hospital News.—Official word has been received by Dean Charles K. Clarke of the medical faculty of the University of Toronto that No. 4 Base Hospital, under command of Lieut.-Col. James A. Roberts, has departed for the Mediterranean. The hospital was organized by the University of Toronto in March and April last, and left for England early in May. Since that time it has been doing work in England. It is composed of forty-four medical men, many prominent in practice in Toronto, and seventy-three nurses. Miss Beatrice Bartlett, an Anglican Sister of the Church of England, lectured recently in Montreal on the need of help for the hospitals in France. She has organized several hospitals for the French government. She spoke of thousands of men blinded by gas fumes, thousands made insane. She has made fifty-two trips across the English Channel since the beginning of the war. At one time she saw 10,000 wounded around one base hospital and 40,000 refugees. She took a munition worker on one occasion to France to show him the war conditions, and had showed him tables whereon 9,000 amputations had been performed. His report to 140,000 of his mates had made them all workers for the cause.——McGill's Tent Town Hospital at the front is said to be a model hospital. It is under command of Lieut.-Col. Herbert S. Birkett, Montreal.

GENERAL

Ohio Valley Meeting.—The annual meeting of the Ohio Valley Medical Association will be held in Evansville, November 3 and 4.

Tuberculosis Examination.—An announcement has been made by the National Association for the Study and Prevention of Tuberculosis, that a national medical examination day is to be made a part of the plans for Tuberculosis Week, December 6 to 12. December 8 is set for medical examination day and this is the first step toward the securing of an annual physical examination for every one in the United States. Children's Health Crusade Day is planned for December 10.

Health Education.—The United States Public Health Service, believing that "education is the road to sanitary progress," has establish a loan library with stereopticon slides which it sends out on request of sanitarians, educators, and others interested in the promulgation of the doctrines of hygiene and public sanitation. There are special sets of slides on diseases of children, hookworm, leprosy, malaria, milk production, mouth hygiene, pellagra, bubonic plague, rural schools, smallpox, tropical diseases, tuberculosis and typhoid fever.

Prevention of Infant Mortality.—The sixth annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held in Philadelphia, November 12 to 15. The subjects to be taken up at the meeting include eugenics, effect of the economic standing of the family on infant mortality; infant welfare nursing in small cities, towns and rural districts; institutional mortality; midwifery conditions and prevention of respiratory diseases. The topic of "Economic Aspects of Infant Welfare" will be discussed at a joint session with the Philadelphia County Medical Society at the Philadelphia College of Physicians. Other sessions will take place at the Bellevue-Stratford.

Bequests and Donations.—The following bequests and donations have recently been announced:

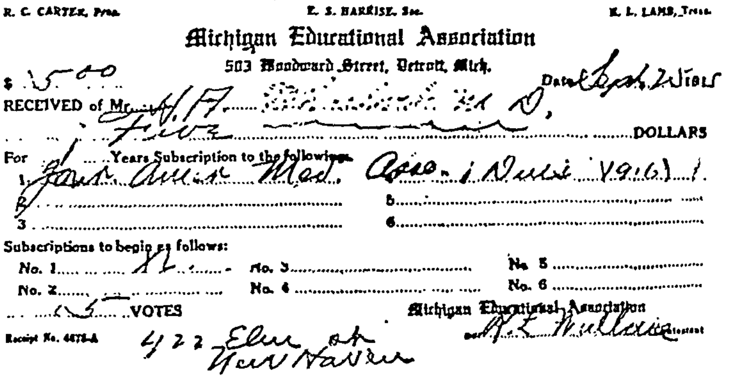
St. Joseph's Hospital, Alton, Ill., $3,000, as the result of a bazaar recently held.

Michael Reese Hospital, Chicago, $25,000; Chicago-Winfield Tuberculosis Sanatorium, Winfield, Ill., $5,000, by the will of Edwin G. Foreman.

Methodist Hospital, Philadelphia, a contingent bequest of $3,600 or more, dependent on the death of direct beneficiaries by a codicil to the will of Charles Fox.

St. Vincent's Charity Hospital, Cleveland, $25,000, for the equipment of the operating department of a new wing to the hospital, by the will of Dr. Dudley Peter Allen, Cleveland.

Subscription Swindlers Still at Work.—Every few months we are compelled to warn our readers against fraudulent canvassers and collectors. Seven weeks ago we referred specifically to a scheme operated under the title of the "Cornell Educational Association." In this an individual *presents himself as a contestant for a prize in the form of a scholarship* awarded by Cornell Educational Association to the one sending the most business in a certain length of time. The scheme is a successful one because it appeals to the sympathies of the good nature of the average man—to the one who wants to help the student get an education.



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New Haven

Hence it is worked under different names. One to which we have already called attention is the National Educational Association; the latest is the Michigan Educational Association. In spite of our repeated warnings, evidence is received every day or two that some of our readers are being caught. To distinctly emphasize this warning, we are reproducing in a reduced form a blank that caught some of our readers within the last two or three weeks. The same names appear as officers on the various blanks—the name of the alleged institution and the canvasser changes.

FOREIGN

Control of Vaccination at Vienna.—The Vienna authorities are utilizing the opportunity afforded by distribution of the bread and flour tickets to householders to gather data in regard to vaccination. Question blanks regarding vaccination are given out with the tickets and they are required to be filled in for each inmate of the building.

Nipiology—the Science of Infant Welfare.—Prof. E. Cacace of the University of Naples has coined this term, "nipiology," to express that branch of pediatrics dealing with young infants. The term is from the Greek "nepios," and he has organized a Nipiologic Society in connection with the Instituto Nipioigienico, of which he is director. The scope of the institute and society is the study of early infancy from the biologic, psychologic and clinical standpoints, and for records and welfare work of all kinds for infants, and for training mothers and prospective mothers. The society in question accepts lay members on payment of small annual dues, and both local and national women's organizations are taking an active interest in the work of the new Societa di nipiologia.

Scarcity of Physicians in Galicia.—The Austrian department of the interior has ordered all physicians who have occupied official positions in Galicia to return to their posts at once, regardless of what they may be doing at the time. If serving in hospitals or prisoners' camps they must be relieved of their duties at once and all proceed to Galicia without delay to aid in combating epidemic diseases. All the medical men of Galicia, general practitioners, hospital physicians and surgeons and others who have left Galicia since the war began are urged to return to aid in the pressing work in Galicia unless they are serving now in hospitals or other branches of the sanitary service and the local political authorities certify that their services are indispensable. The word indispensable must be used in its strictest sense. Women physicians are exempted from these orders to return to Galicia. The journey back to Galicia being in the interests of the public safety, the authorities along the way are required to facilitate the journey in every way. Official records are to be kept of the medical men of Galicia and those still missing from their posts may be appealed to through the daily papers. The official decree concludes with provisions to insure registration and a more equable supply of physicians throughout the country, combating the tendency for medical men to gravitate to the cities and leave large areas with inadequate medical attendance. The Runderlass is addressed to all the "district captains" throughout lower Austria; it is published in full in the *Klinisch-therapeutische Wochenschrift* just received.

PARIS LETTER

Paris, Sept. 30, 1915.

The War

EARLY DISINFECTION OF WOUNDS OF WAR

At a recent session of the Académie de médecine, Dr. Tuffier, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, read a paper in which he particularly emphasized the importance of complete and early disinfection of wounds of war, since infections constitute for the wounded a considerable aggravation of their condition, producing a mortality which may run from 6.1 per cent., which is that of wounds in general in the first twelve hours, to 32.1 per cent. if the treatment begins after twelve hours. To be efficacious, disinfection should be early. It should therefore be performed by experienced surgeons at the first-aid posts (which, being too much neglected, have need of improvement) and in the ambulances of the first line.

According to Tuffier, there are three zones in the medical organizations: the first where life is saved; the second where limbs are saved, and the third where they are repaired. If the first of these zones operates well, the other two are relieved of much of their burdens. In the first-aid posts, the skin of the wounded patients should be disinfected by tincture of iodin; then visible foreign bodies should be removed from the wound, the flow of blood checked, a compress moistened with Dakin's fluid [see The Journal, editorial, Sept. 4, 1915, p. 880; Correspondence, Sept. 18, 1915, p. 1048; Queries and Minor Notes, Sept. 25, 1915, p. 1130.—Ed.] placed on the wound, the whole covered with a layer of absorbent cotton held in place by a nonconstricting bandage, and the limb immobilized in a splint. As an antiseptic, Tuffier prefers sodium hypochlorite.

NECESSITY OF REPEATED INJECTIONS OF ANTITETANIC SERUM

At a recent session of the Société de médecine de Paris, Dr. Maurice reported five cases of delayed tetanus, one of which was fatal, which occurred in spite of one injection of antitetanic serum, or even two given eight days apart. Maurice emphasizes the necessity of making systematically a second injection of 10 c.c., eight days after the first, and a third eight days after the second, as Dr. Roux has always recommended, if the wound has not yet cicatrized. No report of any case appears to have been published in which three successive injections of serum were given at eight-day intervals. The production of antitetanic serum is at present sufficient to make it possible to apply rigorously this method of repeated injections. The demands for serum for hospital services should therefore receive more liberal response, and it should not be forbidden to give injections to patients who are reported, very often without any indication of the dose employed, as having already received a preventive injection in the first-line treatment.

Dr. Péraire thinks that it is the fear of anaphylaxis which has prevented the employment of repeated injections of antitetanic serum. To avoid such complications, the employment of very small doses should be recommended, for example, 10 c.c. injected repeatedly every two or three days.

THE GAIT OF PATIENTS WHO HAVE LOST LIMBS

A patient provided with an artificial leg has a peculiar gait which should be well studied for the sake of remedying as far as possible the defects in such apparatus. Dr. Ducroquet, licencié ès sciences, who read a paper on this subject before the Académie de médecine, thinks that the cinematograph gives the best conditions for such study. He has drawn from such a study technical conclusions of great interest with regard to the rôle played by the length of the stump, the more or less perfect adaptation of the apparatus, etc. He was also enabled thus to compare the two types of artificial legs, the French and the American. The American apparatus permits free flexion of the knee. The gait with such an apparatus is better but more fatiguing; it should be used on comparatively level ground, and it requires constant attention. This apparatus should be reserved for city dwellers. In cases of amputation of the lower leg, whether the apparatus be French or American, the gait, though different in the two cases, is often so perfect that the amputation is not suspected. The patient furnished with French apparatus utilizes the movements of articulation of the foot; furnished with American apparatus, he utilizes only a portion of these movements, and bears his weight chiefly on the fore part of the foot.

COMPULSORY REVACCINATION

A law has just been promulgated which in case of war, public calamity, epidemic or threatened epidemic makes vaccination or revaccination against smallpox compulsory for all persons, no matter what their age, who cannot prove a successful vaccination within less than five years.

ANOTHER EXCHANGE OF SERIOUSLY WOUNDED FRENCH AND GERMAN PRISONERS

I mentioned in a previous letter (The Journal, Aug. 7, 1915, p. 545) the first exchange of seriously wounded French and German prisoners of war. Another exchange of the same kind is at present in process. Two convoys of seriously wounded prisoners, returning from Germany by way of Switzerland, have already been received at Lyons.

CIDER FOR THE ARMIES

The senatorial army commission has recently adopted the conclusions of an interesting report by M. André Lebert on the utilization of cider by the armies in the field. According to the statistics of the agricultural department, forty-seven out of the eighty-six departments produce cider. Cider, like wine, may be called a national drink, and it will be favorably received by our armies, no matter from what part of the country they come. Moreover, cider supplies enough energy so that it may without danger replace the wine ration. Half a liter (about a pint) of wine furnishes 300 calories (this is the soldier's ration, which has been reduced for some time); a liter (about a quart) of pure cider will furnish the same number of calories. In order to supply the same amount of energy in the liquid nourishment given to our soldiers, a ration of double volume must be supplied. It should be added that the harvest of cider fruit has been exceptional in 1915, and that from 32,000,000 to 35,000,000 hectoliters of cider will be manufactured in France, while the average production of the last ten years is only 18,000,000. On the other hand, our vineyards have this year yielded a very scanty harvest. One consideration which guided the senatorial commission is the fact that a hectoliter (about 26 gallons) of cider costs from 10 to 12 francs (from about $2 to $2.40); a hectoliter of wine at present costs 40 francs (about $8), and the price will probably rise.

TRAINING OF DOGS FOR THE MEDICAL SERVICE

The Société nationale du chien sanitaire has just made some interesting experiments on the immense grounds of the chateau of Maisons-Laffitte in the outskirts of Paris. Ten dogs, held in leash by their trainers, were loosed in turn to seek for soldiers, hidden in the shrubbery, representing wounded patients. Thanks to their marvelously developed sense of smell, very skilfully trained, the animals discovered the soldiers without difficulty, then returned to seek their masters in order to lead them to the place where the wounded had fallen.

One of the founders and first trainers of the society, M. Leroy, read an interesting report on the present employment of dogs in the armies. It was in 1895 that Captain Tolat first undertook to train dogs. In 1908, M. Lepel-Cointet founded the society, which in August, 1914, at the declaration of war, had as yet only 140 dogs. The members of the society made a great effort, and today more than 700 dogs are at the front. About 100 are being trained in the kennels, previous to being sent to the front.

THE HOSPITAL OF FRENCH CITIES AT MILAN

At the congress held at Cernobbio by the France-Italie and Italia-Francia committees, the French committee took measures to hasten the installation of the hospital of the French cities offered to the Italian Red Cross, section of Milan, with the proceeds of the subscription of the French municipalities. As I mentioned about two weeks ago, the municipal council of Paris recently voted 20,000 francs (about $4,000) for the purpose; many other cities have made similar subscriptions. The hospital will be established in the buildings of the Ricordi workshops, an immense establishment which will permit a model organization. The formal opening of the hospital will be held during November.

MENTION OF A CIVILIAN PHYSICIAN FOR GALLANT CONDUCT

Dr. Sarrazin, mayor of la Couture, department of Pas-de-Calais, has been mentioned for gallant conduct, "never having ceased, under continual bombardment, to traverse the country in order to visit the sick; during the German occupation, the firmness and dignity of his attitude contributed to safeguard the interest of the commune, giving to his fellow citizens a fine example of civic coolness and courage."

Death of Prof. Marcel Oui

Dr. Marcel Oui, professor of the obstetrical clinic at the Faculté de médecine de Lille, has just died in his forty-eighth year at Bordeaux, where he was fulfilling his military duties as head of the first surgical sector of the eighteenth region. He had been a corresponding member of the Académie de médecine since 1910.

LONDON LETTER

LONDON, Oct. 1, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The problem of supplying the new armies with a sufficient number of surgeons still remains a difficulty, although every means is being taken both by the profession and by the military authorities to deal with it. The country is divided into districts in each of which has been constituted a war emergency committee. From the central committee the local organizations are informed of the numbers which each district is estimated to produce, and the answer to this intimation is given by the physicians in the district concerned. Local meetings of the profession have been called, and some of these have been addressed by representatives of the War Office or by prominent members of the profession. Thus all the physicians of the country are impressed by the urgency of the emergency. So far the results are encouraging, but whether they are sufficient remains to be seen. The depletion of hospital staffs for military purposes is causing serious trouble and anxiety, which is well illustrated by the statement of a deputation from Manchester to the executive subcommittee of the war emergency committee. The committee recently issued a circular urging physicians of military age to place their services at the disposal of the War Office. It was pointed out by the chairman of the board of management of the Manchester Royal Infirmary (one of the greatest of the provincial hospitals of England) that in normal times they had 530 beds, 240 had now been added for military purposes, a central branch contained 60 more, and 135 extra beds had also been provided at the relief hospital, making a total of nearly 1,000 beds, over 300 of which were at the disposal of the army. The range of the work is indicated by the following figures: In 1914, 28,000 outpatients and 13,000 inpatients were treated. In a normal year over 20,000 cases of accident come to this hospital and about 7,000 operations are performed. The work is carried on by an honorary staff of 33 and a resident staff of 23 at the infirmary, 2 at the relief hospital. Of the honorary staff, 27 are engaged in the central branch, and 2 at the relief hospital. Of the honorary staff, 27 are engaged in military work, some being wholly absent on such duty, while others doing part work are able to give only partial attention to hospital patients. The resident staff is now reduced to 8 at the infirmary and 1 at each of the auxiliary branches. The work is being done by senior students, but the number of these is limited. The work of the hospital in these circumstances is largely supervised by the resident medical officer, the resident surgical officer, and the accident house surgeon, to whom also much of the clinical education of the students falls. These posts are held by highly tried and competent men; their tenure is often three years, and the occupants are next in succession to vacancies on the permanent honorary staff. If the circular of the war emergency committee deprived the Manchester Royal Infirmary of their services at this juncture the difficulties of carrying on the work would be insuperable. The deputation asked that these men might receive an intimation that their services in their present positions are so valuable that they would not be called on; at any rate that they should receive a notice of one or two months so that the hospital could make some arrangement. The committee replied to the deputation by saying that the difficulty with regard to residents would have to be met in some places by the honorary staff becoming resident, in some by the employment of outside physicians as half timers, and in some by the principle of employing in succession recently qualified physicians who had already taken commissions in the army, though this could obtain only at hospitals to which a teaching school was attached.

WOMEN PHYSICIANS AND THE WAR

The shortage of physicians has given a great impetus to the employment of women physicians, who are now sought for posts which were not previously open to them. At the beginning of the war they organized and ran entirely Red Cross hospitals in Belgium, France and Serbia. One of their units on the way to Serbia was stopped at Malta to attend to the British wounded. When one of their earliest hospitals under the French Red Cross, stationed first in Paris and later at Wimereux, was no longer needed it was taken over by our own War Office and is now doing excellent work. But it is in civil life that the greatest demand for women physicians has arisen—to take the place of men in all sorts of capacities, public and private. The medical journals are full of advertisements offering posts to women, who before the war were practically never mentioned, and though not formally were tacitly excluded from the posts advertised. Now the position has become so acute that a large hospital sent an application to the secretary of the Women's Medical School, "Send us *any* women at *any* salary." However, it must be borne in mind that the large proportion of the posts now offered are for newly qualified and junior physicians. Practically none are offered to older and more experienced women. Many of the women at home on furlough from India and other parts are filling the posts of men who have undertaken military service. Even women who have never practiced before, or who have retired, are giving their services. An impetus has been given to the enlargement of the largest medical school for women in the country, the London School of Medicine for Women, to train more students, and a fund of $150,000 is being raised for the purpose of enlarging the school.

MAIMED SAILORS AND SOLDIERS

One of the ghastly results of the war, the sailor or soldier who has lost a limb, is everywhere in evidence. Needless to say, everything possible has been done to show the gratitude of the country to these valiant men. A special hospital has been erected at Roehampton where they are provided at the expense of the state with artificial limbs and taught how to use them. Their numbers are so great that 800 are at the present moment awaiting admission, although the hospital has been considerably enlarged. With a view to their future employment and also to provide useful occupation for the men while in hospital, workshops fitted with model motor chassis, electrical appliances, lathes, etc., are being organized with competent instructors. A man who has lost his right hand is taught to write with the left, and classes for other industries will be arranged. An employment bureau working in conjunction with existing societies and employers of labor has also been established, and already a number of men have been placed in good situations.

BERLIN LETTER

Berlin, Sept. 21, 1915.

Death of Professor Ewald

Prof. C. A. Ewald died in Berlin yesterday. Had he lived until October 30, he would have been 70 years of age. Two months ago he developed a fever, which, although of an indefinite nature, later was assumed to be a symptom of leukemia. This diagnosis was not confirmed by a necropsy, and it is probable that another diagnosis might have been made on the basis of the postmortem report, because leukemia occurs but rarely at so advanced an age as 70. Next to Kussmaul and Leube, Ewald was most responsible for the founding of the clinic for stomach diseases. Although an associate of the men mentioned, he always worked independently, contributing many original observations of the diseases of the gastro-intestinal tract. Ewald was born in Berlin, and his medical studies were made here as well as in Heidelberg and in Bonn. His doctorate thesis, published in 1870, was entitled "The Histology of the Salivary Glands," showing that his interest in the gastro-intestinal tract was already developed at the time of his graduation. In 1871 he was appointed an assistant by Frerichs in the first medical clinic. He began to lecture in 1874; in 1882 he was made extraordinary professor, and a few years ago was advanced to a regular professorship. In 1876 he was appointed director of the city gynecologic institute, and in 1886 he was appointed Senator's successor in the direction of the medical division of the Augusta Hospital.

Well worthy of mention is his long term of service as editor of the *Berliner klinische Wochenschrift*, in which position he succeeded Professor Waldenburg in 1881. He was sole editor until 1907, when he associated Professor Posner (son of the founder of the *Wochenschrift*) with himself. Until a few years ago he remained in active service as editor. The most notable of his many contributions to medical literature are his lectures on digestion and his book on diseases of the stomach. Among his other literary efforts are a handbook of therapeutics; the articles on diseases of the thyroid, myxedema and cretinism in Nothnagel's "Special Pathology and Therapeutics," and a book on diseases of the liver. He contributed to many compilations and sets of books. Of these should be mentioned Eulenburg's Real-Encyclopedia. An enormous number of clinical articles were contributed by him to the literature, covering all phases of internal medicine, and all of his illustrations were drawn by himself, both black and colored. His mentality was unclouded until the end. He occupied himself continuously with literary work, and even in his last days attempted to complete his share of the manuscript for a collaborated work.

Ewald's influence on the development of his specialty is well shown in the work done by his pupils. Nearly all the prominent younger men who are devoting their time to the study of the diseases of the gastro-intestinal tract have been pupils of Ewald, especially Boas, Rosenheim, Strauss and L. Kuttner. In spite of his activities in the field of medicine, Ewald found time to devote himself to other things, such as the building and maintenance of hospitals for children on the seacoast. For more than thirty years he was secretary of the society for "Seehospize" (seaside sanatoriums). For twenty-five years he was librarian of the Berlin Medical Society, rendering splendid and worthy service. He felt deeply the action taken by this society not long ago when it failed to reelect him to his position because of a misunderstanding of the attitude taken by him in the matter of the Russian consultations scandal, as I mentioned at the time. He never forgot this action while he lived. Science and literature in general also commanded his lively interest. As a relative of Du Bois-Reymond he soon became a valuable member of the more cultured Berlin society and, together with his popular wife, he succeeded in making his home the gathering place for the devotees of art and science. He also had many international relationships, especially with England. Personally, he was a little hard, and his rather extraordinary lack of feeling for his associates and colleagues often aroused ill feeling against him, and probably had much to do with the action taken by the Berlin Medical Society, mentioned above. His death certainly will leave a great void in the medical circles of Berlin as well as in those of the world in general.

American Red Cross for Russia

By an agreement between Germany and Austria-Hungary on the one hand, and Russia on the other, brought about through the agency of the American ambassador at Berlin, physicians and nurses of the American Red Cross will be sent to the prison camps and hospitals in Russia and Siberia to render professional service. The members of this group have been in Germany and Austria-Hungary for the past year giving service in Gleiwitz, Kosel, Vienna and Budapest. The physicians and nurses of the American Red Cross in Serbia have offered their services in the work. About twenty-five American physicians and fifty nurses will be engaged in this work, the expenses being paid by Germany and Austria-Hungary. The American Red Cross will contribute the medicines and bandages.

Injuries in Aviation Accidents

The surgeon of an aviation corps, Dr. Schöppler, has noticed that the injuries sustained by falling from a great height present a typical picture if the motor of the aeroplane does not fall on the aviator's body. As a rule there are found fractures of the base of the skull, tearing of the lung tissues, and typical fractures of the upper and lower extremities, no matter how far the body has fallen. Fracture of the sternal end of the clavicle, of the forearm, of the lower leg above the epiphyseal line, and in the middle of the femur in the upper third, and complete comminution of the tarsus are present in nearly every case. Injuries of the spinal column are seen but rarely, whereas the viscera frequently burst or are torn to pieces; especially is this true of the heart, liver, lungs and the large blood vessels.

Personal

September 21, Professor Eberth, formerly professor of pathologic anatomy in Halle, celebrated his eightieth birthday. His claim to fame is the discovery of the typhoid bacillus. Since 1911 he has been living in a suburb of Berlin.

Marriages

Horace Hutchins Le Seur, M.D., Niagara Falls, N. Y., to Miss Helen Minerva Crossett of Cortland, Ill., at Batavia, N. Y., September 29.

Clarence Flack Graham, M.D., Albany, N. Y., to Miss Mary Jarvis Fish of Brookline, Mass., at Rye Beach, N. H., October 6.

Charles Percy Noble, M.D., Boise, Idaho, to Miss Elizabeth M. Scanlan of St. David's, Pa., at Towson, Md., October 7.

Henry C. Walbeck, Jr., M.D., Stroud, Okla., to Miss Amelia Bedwell of Louisville, Ky., in Sapulpa, Okla., recently.

Eugene Bascom Wright, M.D., Richmond, W. Va., to Miss Elsie E. Daub of Baltimore, in Philadelphia, September 11.

Clara Amelia Hale, M.D., to George Groot Gregory, both of Syracuse, N. Y., at Fayetteville, N. Y., September 15.

Harry Edwin Kleinschmidt, M.D., St. Louis, to Miss Anna Josephine McNabney of Sparta, Ill., October 7.

Edward Joseph O'Brien, Jr., M.D., Brighton, Boston, to Miss Isabel Roche of Medford, Mass., September 29.

Alexander Hamilton Rice, M.D., Boston, to Mrs. Eleanor Elkins Widener of Philadelphia, in Boston, October 6.

Thomas N. Fleming, M.D., Cold Spring, Minn., to Miss Rose Bingenheim of Creighton, Neb., September 17.

Matthew Lincoln Turner, M.D. Griswold, Iowa, to Miss Loretta E. Brown of Des Moines, Iowa, October 2.

Martin Heydemann, M.D., Boston, to Miss Lillian Adelaide Pelonsky of Roxbury, Boston, October 6.

Edward Lingan Bowlus, M.D., Middletown, Md., to Miss Georgia Martin Potter, in Baltimore, October 6.

Willis Guy Mudd, M.D., to Miss Ruth Faustina Acorn, both of Denver, in San Francisco, August 4.

James Bray Bradley, M.D., Eaton Rapids, Mich., to Miss Pearl Parsall of Howell, Mich., October 12.

James P. H. Ruddy, M.D., Scranton, Pa., to Miss Mary Kilpatrick of Carbondale, Pa., October 12.

Virgil E. Robbins, M.D., to Miss Ruby Lee Thomas, both of Quitman, Texas, in Dallas, June 20.

Hugh M. Mulliken, M.D., Terre Haute, Ind., to Miss Laura Fisher of Philadelphia, recently.

Vernon C. David, M.D., Chicago, to Miss Marguerite Record of Minneapolis, October 16.

Deaths

Alice Bellvadore Sams-Turner, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1884; aged 56; an honorary member of the Jasper County (Iowa) Medical Society and of the State Society of Iowa Medical Women; health officer of Colfax, Iowa, during 1886 and 1887; one of the founders, a trustee and for twelve years president of the Colfax Free Public Library; died at her home in that city, July 10, from carcinoma of the breast.

William Merrill McCoy, M.D. College of Physicians and Surgeons, Chicago, 1901; aged 39; a Fellow of the American Medical Association and a well-known surgeon of north central Washington; formerly of Clinton, Iowa, but for the last ten years a practitioner of Wenatchee, Wash.; died in the Deaconess Hospital in that city, October 1, from intestinal obstruction following an operation for appendicitis, eleven days before.

Robert Benjamin Barron, M.D. Bellevue Hospital Medical School, 1883; aged 55; a member of the Medical Association of Georgia; formerly chairman of the Board of Health of Macon; and a member of the board of medical directors of and visiting physician to the Macon Hospital; for twenty years a resident of Macon; died at his home in Gray, Jones County, Ga., October 2, from heart disease.

James Water McLean, M.D. Rush Medical College, 1869; aged 72; a Fellow of the American Medical Association and Chicago, Milwaukee and St. Paul Railway Surgeons' Association; local surgeon of that road at Fayette, Iowa; died at his home in that city, October 4, from bronchopneumonia.

Walker W. McConnell, M.D. Western Reserve University, Cleveland, 1888; Jefferson Medical College, Philadelphia, 1898; a member of the Medical Society of the State of Pennsylvania; director of the First National Bank of Harrisville; died at his home in that city, July 2, from nephritis.

Stephen Garland Sharp, Jr., M.D. Medical College of Ohio, Cincinnati, 1905; aged 32; surgeon for the Braden Copper Company and in charge of the company's hospital at Rancagua, Chile, South America; died in Valparaiso, Chile, about September 28, from spinal meningitis.

Cameron Chamberlin, M.D. Medical College of Indiana, Indianapolis, 1902; aged 36; a Fellow of the American Medical Association; a well-known practitioner of Indianapolis; died in the Presbyterian Hospital, Chicago, October 4, from spinal meningitis.

James C. Word, M.D. Jefferson Medical College, 1860; aged 81; surgeon in the Confederate service throughout the Civil War and since that time a practitioner of Monroe County, Miss.; died at the home of his daughter in Aberdeen, Miss., October 3.

Theodore St. John, M.D. New York Homeopathic Medical College, New York City, 1881; aged 83; a pioneer of Nevada, but since 1878 a resident of Connecticut; died at his home in Thomaston, Conn., September 11, from cerebral hemorrhage.

Charles Hamilton Browning, M.D. Western Reserve University, Cleveland, 1897; aged 44; a Fellow of the American Medical Association, and a prominent practitioner of Oberlin, Ohio; died at his home, September 28, from cerebral hemorrhage.

Edward Osband Sutton, M.D. University of Michigan, Ann Arbor, 1903; aged 40; of Tacoma, Wash.; a Fellow of the American Medical Association; died in the Seattle General Hospital; October 1, a week after a surgical operation.

John Prentiss Walker, M.D. Washington University, St. Louis, 1875; aged 68; of Lamonte, Mo.; a Confederate veteran; died in the University Hospital, Kansas City, October 5, a week after a surgical operation for carcinoma.

Leonidas Mason, M.D. Medical College of Ohio, Cincinnati, 1872; aged 78; a veteran of the Civil War; formerly a member of the Indiana State Medical Association; died at his home in Bluffton, Ind., October 5, from pneumonia.

Frank Lewis Peiro, M.D. University of Vermont, Burlington, 1866; aged 76; for more than forty years a practitioner of Chicago; a veteran of the Civil War; died at the home of his daughter in Evanston, Ill., October 12.

Jacob A. Grove, M.D. Eclectic Medical Institute, Cincinnati, 1869; aged 82; a veteran of the Civil War; died at his home in Kenton, Ohio, October 4.

Samuel Stein, M.D. University of the South, Sewanee, Tenn., 1908; aged 32; a member of the Mississippi State Medical Association; of Greenville, Miss.; died in the King's Daughters' Hospital in that place, October 3.

Date Kimball Thyng, M.D. University of Minnesota, Minneapolis, 1896; aged 41; of Tacoma, Wash.; a member of the Washington State Medical Association; died in Rochester, Minn., October 2, from leukemia.

Edmund R. Bolding, M.D. College of Physicians and Surgeons, Kansas City, Kan., 1898; aged 44; of Eldurg, Kan.; was found dead in his room in the Savoy Hotel, Kansas City, Mo., October 9, from disease of the kidney.

Hiram Garrett Miller, M.D. Eclectic Medical Institute, Cincinnati, 1869; aged 90; for many years a practitioner of La Crosse, Wis., and a Forty-Niner; died at his home in Charlottesville, W. Va., October 6.

Robert J. Roach (license, Wisconsin, 1899), a practitioner for twenty-two years; died at his home in Cobb, Wis., September 28, from the effects of carbolic acid, self-administered, it is believed, with suicidal intent.

James D. Brooks, M.D. Jenner Medical College, Chicago, 1899; aged 43; a member of the State Medical Association of Texas; died at his home in San Angelo, Texas, July 2, from gangrene of the lungs.

Stephen Marcus Cook, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1878; aged 82; for nearly fifty years a practitioner of Belle Plaine, Iowa; died at his home in that city, September 30.

George W. Combs, M.D. Cincinnati College of Medicine and Surgery, 1879; aged 77; a member of the Illinois State Medical Society; died at his home in Ridgway, Ill., July 2, from endocarditis.

Absalom S. Walsh, M.D. Missouri Medical College, St. Louis, 1876; formerly of St. Louis; for many years a surgical instrument dealer of London, England; died recently in that city.

Henry W. Rihl, M.D. Jefferson Medical College, 1849; aged 92; for nearly sixty years a practitioner of Germantown, Philadelphia; died at his home in that place, October 11.

Harry Oliver Lightner, M.D. Baltimore Medical College, 1896; aged 43; also a druggist; died at his home in Marysville, Pa., October 5, as the result of a nervous breakdown.

Edwin S. Kellogg, M.D. Hahnemann Medical College, Philadelphia, 1878; aged 64; died at his sanatorium in Helena, Mont., October 9, from valvular heart disease.

Floyd M. Young, M.D. Georgia College of Eclectic Medicine and Surgery, Atlanta, 1887; aged 50; died suddenly in his office in Atlanta, October 6, from acute gastritis.

Abraham H. Parker, M.D. Pulte Medical College, Cincinnati, 1889; aged 75; of Macon, Ga.; died in the Macon City Hospital, September 22, from chronic nephritis.

Charles Wallace Stiles, M.D. Boston University School of Medicine, 1878; aged 65; died at his home in Somerville, Mass., September 9, from nervous breakdown.

Thomas M. Bulick, M.D. Hahnemann Medical College, Philadelphia, 1882; aged 75; died at his home in Harrisburg, Pa., August 9, from acute nephritis.

John H. Cameron, M.D. Medical College of Virginia, Richmond, 1860; aged 79; died at his home in Goshen, Va., July 16, from heart disease.

James D. Bragg, M.D. Albany (N. Y.) Medical College, 1867; aged 69; died at his home in Bridgeport, Conn., July 23, from acute gastritis.

George W. Prugh, M.D. Medical College of Ohio, Cincinnati, 1875; aged 65; died at his home in Cincinnati, October 12.

E. B. Willan, M.D. Medical College of Indiana, Indianapolis, 1881; aged 82; died at his home in Trafalgar, Ind., October 5.

James W. Mitchell, M.D. Southern Medical College, Atlanta, Ga., 1880; aged 54; died at his home in Atlanta, October 1.

Madison Bayard Morris, M.D. Hahnemann Medical College, Philadelphia, 1871; aged 88; died in Edina, Mo., October 2.

Edward P. Harrison (license, Indiana, 1897), aged 70; died at his home in Rockport, Ind., July 31, from enterocolitis.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

LACTOPEPTINE AND ELIXIR LACTOPEPTINE

Report of the Council on Pharmacy and Chemistry

Mixtures of pepsin and pancreatin are therapeutically irrational; the two substances are not indicated in the same conditions, nor can they act together. Under physiologic conditions, such mixtures are chemically impossible: in a liquid medium the ingredients destroy each other.

Lactopeptine is manufactured by the New York Pharmacal Association, Yonkers, N. Y. It is sold under the claim that it contains pepsin, diastase, pancreatin, lactic acid and hydrochloric acid. This product was among the first proprietary preparations examined by the Council on Pharmacy and Chemistry. The report of the investigation was published in THE JOURNAL, March 16, 1907, p. 959. The preparation was found to be practically inert—"essentially a weak saccharated pepsin," devoid of tryptic activity.

Six years later it was still widely advertised with the same irrational claims. A referee (A) therefore examined Lactopeptine (powdered) for the Council in 1913, and confirmed the previous findings. The referee's report was published in THE JOURNAL, Aug. 2, 1913, p. 358.

Nearly four months after this publication, the manufacturers protested against the report, maintaining, contrary to the findings of the Council, that Lactopeptine possesses pancreatic activity and contains "loosely combined" hydrochloric acid. Referee A therefore repeated his examination, and a second referee (B), independently, examined specimens of Lactopeptine (powder) purchased on the open market for the purpose shortly before.

A few specimens examined by these two referees showed a slight tryptic activity; most of them showed none. The amount of hydrochloric acid present was insignificant.

The reports of the two referees were referred to the manufacturers, who again protested vehemently against these findings, this time on the ground that the specimens were old. The manufacturers also cited the work of three chemists to disprove the findings of the referees, and demanded that the Council reexamine Lactopeptine, making use of fresh specimens. The Council refused for the following reasons:

1. So long as the packages of Lactopeptine are not dated, the activity of specimens known to be fresh is of no practical importance. The activity of the actual market supply is the only question of interest to the profession. The only fair test is that made on specimens representative of the product sold to the ultimate consumer.

2. The evidence presented by the manufacturers did not warrant a reexamination, since the work of two of the chemists cited substantially corroborates the results obtained by the Council's referees from the fresher specimens. The figures for tryptic activity obtained by the third chemist cited by the manufacturers could not be accepted by the Council, since it was at variance with all other known results of investigations of Lactopeptine.

3. As stated at the outset, whatever the tryptic activity of the mixture, it is therapeutically useless. A demonstration of tryptic activity in a mixture containing both pepsin and pancreatin is of merely theoretical interest.

Such activity, of course, cannot be expected, even on theoretical grounds, in liquid mixtures like Elixir Lactopeptine.

The Council therefore again declared Lactopeptine (powder and tablets) and Elixir Lactopeptine ineligible for New and Nonofficial Remedies and authorized publication of the following statement.

W. A. PUCKNER, Secretary.

THE COUNCIL'S REPORT*

Lactopeptine powder (New York Pharmacal Association, Yonkers, N. Y.) was examined by the Council in 1907. At that time it was claimed to contain

> ". . . the five active agents of digestion—pepsin, diastase (veg. ptyalin), pancreatin, lactic acid and hydrochloric acid—combined in the proper proportion to insure the best results."

The examination showed that the preparation was essentially "a weak saccharated pepsin," containing but small amounts of pepsin, no hydrochloric acid, or mere traces only, and no diastase or pancreatin (THE JOURNAL, March 16, 1907).

In 1913, the product was reexamined, because the claims, as to both composition and therapeutic value, were still being made. Samples were tested both of the American product, and of a British product from John Morgan Richards and Sons, London. The original findings were confirmed and the results were published in THE JOURNAL, Aug. 2, 1913, p. 358. Nearly four months later (November 24) the New York Pharmacal Association wrote to the Council, objecting to the findings and maintaining that Lactopeptine possesses pancreatic activity and contains ("in loose chemical combination") hydrochloric acid. In accordance with the custom of the Council, the work was sent back for review to the referee (A), whose conclusions were then tested by a second referee (B), a physiologic chemist, not a member of the Council, selected because of his special knowledge of the subject.

In December, 1913, Referee A made a large number of new tests to determine proteolytic and amylolytic power. His results show that the ferment activity of the preparation is so low as to merit no recognition in practical use. The tests also show that the amount of lactic acid or "loosely combined HCl" (or both) present is too small to have any appreciable physiologic activity and therefore to be of any therapeutic value.

Nine samples of Lactopeptine purchased in the open market in December, 1913, and January, 1914, were examined be Referee B early in 1914. His studies show absence of amylase in all samples; presence of pepsin, giving weak reactions even when compared with those of old pepsin preparations; complete absence of trypsin in seven out of nine samples, tryptic reaction being obtained in two samples, in one of which the reaction, "slight at best and of no practical import," was obtained only after treatment for twelve hours or more.

The presence of tryptic activity in two out of the nine samples may be due to the fresher condition of these specimens, as indicated by the serial numbers. The evidence shows that it is a commercial impossibility to market mixtures of pepsin, pancreatin and lactic acid so that they can display any material tryptic activity.

It should be reaffirmed that mixtures combining peptic and pancreatic activities are not feasible, because pepsin cannot act except in the presence of acid, and pancreatin is destroyed by acid and by peptic activity. Furthermore, in conditions in which pancreatin is called for, pepsin is not, and vice versa; therefore the administration of mixtures of pepsin and pancreatin would be unjustified, even if both constituents could be expected to exert activity.

The foregoing observations apply to Lactopeptine in powder and tablet form.

While mixtures of pepsin and pancreatin are unscientific and unjustified, theoretically the two substances *may* coexist in a solid preparation, and the activity of such a preparation is consequently a proper subject of investigation. Theoretically as well as practically, however, pepsin and pancreatin cannot exist together in solution. The claims made for Elixir Lactopeptine and all other liquid preparations sold as mixtures of pepsin and pancreatin are therefore impossible. The Council has previously taken action (The Journal, Feb. 2, 1907, p. 434) refusing to approve for inclusion with New and Nonofficial Remedies such preparations, calling the attention of the medical profession and of manufacturers to their worthlessness, and requesting the American Pharmaceutical Association to instruct its committee on the National Formulary to omit from the next edition of that work a liquid preparation of pepsin and pancreatin recognized under the title of "elixir digestivum compositum."

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* Owing to lack of space, the referee's reports are here omitted. They will be given in full in the Annual Reports of the Council.

It is recommended that the Council reaffirm this previous action, and that Lactopeptine and Elixir Lactopeptine be declared ineligible for New and Nonofficial Remedies because of conflict with Rule 10 ("No article will be admitted which, because of its unscientific composition, is useless or inimical to the best interests of the public or of the medical profession").

Manufacturers' Protest and Council's Answer

The foregoing was submitted, together with the findings of the two referees, to the manufacturers. They protested again, alleging that:

AGE OF SPECIMENS

First.—The specimens of Lactopeptine examined by the second referee were old. The dates of manufacture corresponding to the several batch numbers are supplied by the manufacturers as follows:

2275 (Powder)	September, 1908
2301 (Powder)	June, 1909
2312 (Powder)	December, 1909
2348 (Powder)	October, 1911
2352 (Powder)	December, 1911
2364 (Powder)	July, 1912
2374 (Powder)	March, 1913
2383 (Powder)	October, 1913
1638 (Tablets)	October, 1911

The manufacturers assert that they do not understand how specimens of these ages could have been purchased on the open market in 1913 and 1914, inasmuch as their agents are and long have been instructed to take up from the druggist all lots of Lactopeptine which, as indicated by the batch numbers, have attained "any appreciable age." The age of the specimens, the manufacturers declare, deprives the table in the second referee's report of "all significance or interest."

As previously stated, however, the specimens of Lactopeptine examined were purchased on the open market in various localities in unbroken packages, in December, 1913, and January, 1914. They thus represent stock used in filling physicians' prescriptions or sold to the public. Neither the referees nor any one connected with the Council had any means of knowing the age of the specimens until the dates of manufacture were furnished by the New York Pharmacal Association. The first tests of the second referee were made in February, 1914, on Specimens 2374 and 2383, which were then, it would appear, about one year old and four months old, respectively. The Council has repeatedly urged that pharmaceutical substances which are subject to deterioration should be dated by the manufacturer, and a similar suggestion has been made by the Bureau of Chemistry of the U. S. Department of Agriculture concerning mixtures containing enzymes. Nothwithstanding the instructions which the New York Pharmacal Association claims to have given its agents, the market supply of Lactopeptine in December, 1913, and January, 1914, was not composed of new stock, and until the manufacturers adopt the practice of dating packages, there can be no assurance that it will be fresh. In this connection it is of interest to note that the Bureau of Chemistry of the U. S. Department of Agriculaure has issued a warning that it will judge such products by the degree of their activity when they reach the consumer, i. e., as they are found on the market.

REPORTS OF OTHER CHEMISTS

Second.—The New York Pharmacal Association cites the work of several chemists, who have examined Lactopeptine and report the presence of tryptic activity. Dr. S. R. Benedict in December, 1913, reported to the Council "distinct" tryptic activity (digestion in twelve hours by Lactopeptine of 4.2 times its weight of fibrin containing 50 per cent. moisture) in specimens examined by him. These specimens were numbered 2382, and were therefore probably manufactured in October, 1913; compare the dates furnished by the manufacturer for the specimens used by the second referee. No tests against other preparations possessing tryptic activity are reported, and Dr. Benedict expressly disclaims any opinion as to the therapeutic value of the preparation.[1] Dr. P. B. Hawk, whose report was submitted by the manufacturers, found in Lactopeptine by Fermi's method one-fifth the tryptic activity of that of Merck's pancreatin, and by Grützner's method an activity of 18 per cent. of the pancreatin. A test for the production of tryptophan was reported positive. The New York Pharmacal Association also submitted a report from Dr. A. W. Balch, who found pepsin, rennin, trypsin, steapsin, amylopsin and lactic acid present in Lactopeptine; also an amount of combined hydrochloric acid in 1 gm. the equivalent of 1.05 c.c. tenth normal solution or 0.00383 gm. hydrochloric acid. (He reports digestion in twenty-four hours by Lactopeptine of 25 times its own weight of fibrin. "An active extract of pancreas reacted exactly like the Lactopeptine solution.") The serial numbers of the specimens tested by Hawk and Balch are not given, but no doubt they were fresh.

CONCLUSIONS

The New York Pharmacal Association demanded that the referee reexamine Lactopeptine, making use of fresh specimens. The Council held that this was unnecessary, for the following reasons:

1. The previous finding of the Council, that specimens of Lactopeptine found on the open market are essentially weak saccharated pepsins, is not to be refuted by examination of fresh specimens. Even if it be assumed that all old specimens of Lactopeptine have been withdrawn from the market since the last purchase of specimens for the use of the Council's referee, there can be no assurance that the stock will be constantly kept fresh. Unless the manufacturers date their product, physicians cannot know that their pre-

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[1] Dr. Benedict's personal communication to a member of the Council is as follows:

"In the report of the Council upon Lactopeptine which you sent to me, I find the following statement: 'Careful examination failed to show the presence of either diastase or pancreatin.' In this connection I will cite to you the following experiment, carried out by myself: A package containing a 1-ounce bottle of Lactopeptine (powder) with seal unbroken was purchased in the open market and opened in this laboratory. The label bore the special Number 6 2382. Two hundred milligrams of this product was dissolved in 50 c.c. of a 0.25 per cent. solution of sodium carbonate in water. This solution was divided into two portions of 25 c.c. each. One of these portions was boiled at once, and after cooling was added to 1 gm. of moist fibrin contained in a flask. The other portion (unboiled) was also added to 1 gm. of moist fibrin contained in a flask. Both flasks (after addition of 5 c.c. of toluene to each) were stoppered and placed in an incubator at 37 degrees, and left there for twelve hours. Examination of the two flasks at the end of this period showed that the one to which the unboiled solution of Lactopeptine [powder] had been added contained much less solid protein than did the other. Although this fact was obvious to the naked eye, the exact extent of digestion in the two flasks was determined by heating both to boiling, acidifying with acetic acid, diluting to definite volume, filtering and determining the nitrogen in the filtrate by Kjeldahl's method. Subtracting the trace of nitrogen contained in the filtrate of the control flask, the results showed that 42 per cent. of the original fibrin present had been dissolved by the unboiled Lactopeptine solution. This can be ascribed only to tryptic activity under the conditions of this experiment. Furthermore, this is not simply a 'trace' of activity, but is at least sufficiently marked to warrant a statement that this sample showed a distinct tryptic activity. Inasmuch as I have obtained exactly similar results with two other samples of Lactopeptine (powder) (these being the only ones I have examined), I am inclined to question the correctness of the Council's statement regarding the absence of trypsin from this preparation. [As noted above, a fresh preparation was used.—Ed.]

"May I again add that I am making no statement regarding therapeutic value of preparation, and that I have no opinion upon that matter one way or the other. My work was undertaken solely out of interest to see whether trypsin could exist in the powder (which gives a markedly acid solution when dissolved in water). The Elixir Lactopeptine could theoretically show no tryptic activity, nor have I found any trace of such activity in one sample of the Elixir examined.

"In making use of any of the contents of my letters kindly include the statement that my work upon Lactopeptine was done without remuneration of any kind, and was done only for the scientific interest attached to the question."

scriptions are filled with fresh material. Nor is it reasonable to ask that the Council examine the market supply of any given proprietary at a time selected by the manufacturers.

2. Without entering into all questions of detail in the analyses, the Council is willing to accept the reports of Drs. Benedict and Hawk as representative of fresh Lactopeptine powder. It is therefore unnecessary for the Council to make further experiments along this line. The results of these two chemists in no wise contradict the conclusions of the Council's referees, being comparable with those obtained by the referee on the fresher specimens used by them. The experiments of Drs. Hawk and Benedict show a degree of tryptic activity which, though chemically not negligible, is quite without significance practically, even if it could be assumed that the trypsin in the fresh Lactopeptine escaped destruction in the stomach. The figures for tryptic activity given by Dr. Benedict do not differ materially from those of the first referee. Those of Professor Hawk show a tryptic activity of from 18 to 20 per cent. of that of commercial pancreatin—and commercial pancreatins ordinarily are of low tryptic activity, if not inert (see Long and Muhleman: *Arch. Int. Med.*, February, 1914, p. 314.) The reports of these chemists present no reason for changing the conclusion that "it is a commercial impossibility to market mixtures of pepsin, pancreatin and lactic acid so that they can display any material tryptic activity."

The results which Dr. Balch obtained in a test for tryptic activity show a marked discrepancy with those obtained by Drs. Hawk and Benedict, not to mention the Council's referees, and also with the fact that only about 11 per cent. of "pancreatin" is claimed in the published formula of Lactopeptine. The Council is unable to accept Dr. Balch's results for trypsin or rennin as reliable. His other results are without significance and call for no special comment.

3. Even if tryptic activity were conceded to Lactopeptine, the preparation, like all preparations containing pepsin and pancreatin, would still be, as previously stated, therapeutically irrational.

The Council approved the report.

Correspondence

The So-Called "New" Anthrax Serum

To the Editor:—A recent case of anthrax in man in a New York hospital was given unusual publicity by the daily press. This was primarily due to the great respect which the patient enjoyed in his community, and also to the extraordinary courage he manifested during the course of his horrible affliction.

My stenographer happened to be in New York at the time, and reading of the case, he lost no time in communicating with the attending physicians, calling to their attention an anthrax serum which has been prepared by me and which has been extensively tested, both for its prophylactic and its curative value.

The stenographer had this information from taking dictation from me while I was preparing a paper on the subject for the American Veterinary Medical Association's meeting at Oakland, and also from notes which he transcribed for me in connection with the work during the progress of the experiments.

On telegraphic request the serum was forwarded to New York, and was repeatedly administered to the patient with apparently good results. From the reports of the attending physicians the infection had subsided, but as a result of extreme heart weakness he succumbed quite suddenly, his recovery from anthrax being announced in the bulletins sent out by the physicians.

In the meanwhile the daily press heralded the serum as a wonderful discovery, and made many misstatements as to its preparation, application, origin, etc. It is needless for me to explain the difficulty of having scientific matters correctly quoted in the daily press. It was a useless task to have correct data published as to the serum and its preparation. I was placed as a central light in many newspaper dispatches, which was rather an embarrassing position, realizing the undeserved credit given to me.

I have undertaken the experimental work in immunization against anthrax with a view of establishing a more satisfactory method of immunization than those which are now employed in this country. The simultaneous method—consisting of an injection of a potent anthrax serum and a carefully standardized spore vaccine—proved very promising and to my mind superior to the Pasteur method. The results of these experiments were embodied in my paper read before the American Veterinary Medical Association, in which have also been included the results of field experiments.

During the progress of the work we had occasion to treat a considerable number of affected animals with our serum, and obtained remarkable recoveries in a very high percentage of cases, including some of the most severe types. The stenographer, knowing of these results, praised the curative qualities of the serum somewhat beyond its known value, which naturally was interpreted by the newspapers as something wonderful.

It is needless for me to state that anthrax serum has been prepared in Europe by many institutions, and that this phase of immunization has been practiced for several years. We have, however, succeeded in concentrating the serum by a method of precipitation and are now endeavoring to prepare the specific proteins of the immune serum in a dry form to insure its keeping qualities and to prevent contamination. Furthermore, the vaccine which is being used in connection with the serum is an accurately standardized spore vaccine, by which it is possible to establish accurately the number of spores given to an animal.

Although I am satisfied that members of the medical and veterinary professions are familiar with the work which has been carried on in the immunization against anthrax, nevertheless I deem it advisable to state my position in the case in order that I may not be misjudged as attempting to claim priority for something which should and is known by all professional men to belong to others.

It might be of interest, however, to state that in the course of the experiments it was necessary for us to obtain anthrax serum for comparative tests, and to our surprise we found that it was not obtainable in this country. We therefore imported a quantity of such serum, and to our further surprise the comparative test revealed our serum to be at least twice as potent as the one of foreign make, and this may explain the splendid curative value of our anthrax serum.

A. Eichhorn, Washington, D. C.
Chief, Pathological Division, Bureau of Animal Industry,
U. S. Department of Agriculture.

Statistics Regarding Motor Accidents

To the Editor:—Your editorial on the safe and sane Fourth (The Journal, Aug. 28, 1915, p. 803), is of especial interest to me, for I have followed closely the campaign begun by you in 1903. Your success has suggested that I urge you to begin another campaign which, prosecuted with the same zeal as the other, will result in saving many lives, physical suffering and property each year. I refer to automobile accidents. If you will follow the same plan, you will not be compelled to go far in gathering statistics to get appalling figures—figures that will surely arouse the public press to assist you.

W. S. Clark, M.D., Los Angeles.

Rightly Objects to "Guards"

To the Editor:—When I saw in a daily paper the statement that the "guards" at the Springfield State Hospital, Sykesville, Md., had asked an opportunity to form an organization for military drill, I was inclined to make another attempt to dissuade newspaper writers from using the phraseology of medieval times in the care of the insane. But the constant use of the terms "keepers," "guard," "cell," "maniac" and the like, in reference to hospitals for the insane has discouraged me. When, however, a medical journal prints information from Maryland, presumably furnished by a medical man, in which the word "guard" is used, a term alike offensive to patients and friends of patients in hospitals, and to those who have labored for real hospital methods in our institutions for the insane, a feeling of discouragement if not something worse results.

Edward N. Brush, M.D., Towson, Md.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

S. WEIR MITCHELL — RELATIONS BETWEEN ANESTHETIST AND SURGEON

To the Editor:—Please give me: 1. (*a*) The first name of S. Weir Mitchell. (*b*) The year of his birth and death.

2. Has the operator any legal right to dictate to the anesthetist as to what anesthetic shall or shall not be given?

3. Has the anesthetist the legal right to stop the operation at any point if he considers the patient at the time too weak to sustain further manipulation?

A. S. McCormick, M.D., Akron, Ohio.

Answer.—1. (*a*) Silas. (*b*) Born Feb. 15, 1829; died Jan. 4, 1914. The death notice of Dr. Mitchell appeared in The Journal, Jan. 10, 1914.

2. The anesthetist is usually selected by the surgeon. It is customary, as a matter of professional courtesy, for the anesthetist to be governed by the wishes of the surgeon in charge of the case. There is no question of "legal right" involved as there are no laws on this subject. If the anesthetist and the surgeon are unable to agree as to the anesthetic to be used, the anesthetist should withdraw and permit the surgeon to select an anesthetist whose views are in harmony with his own. The responsibility for the result of the operation rests on the surgeon.

3. Here again no "legal right" is involved. It is customary for the anesthetist to call the attention of the surgeon to the patient's condition should dangerous symptoms appear, but it is entirely at the discretion of the surgeon whether or not the operative manipulations should be continued. A few court decisions in malpractice cases touch on the question indirectly, the general principle upheld being that where two or more physicians are jointly in attendance on a patient, each is responsible for the result of his own acts, but not for the results of the acts of the others.

ANAPHYLAXIS FROM DIPHTHERIA ANTITOXIN IN PERSONS PREVIOUSLY INJECTED

To the Editor:—Is it contraindicated to give diphtheria antitoxin to a patient having diphtheria if the patient had diphtheria antitoxin injected either for immunizing or curative purposes at some time previous, say from six months to several years?

In what percentage of cases do we get anaphylactic reactions? Are these very dangerous conditions?

Four days ago I gave a child aged 3 years 5,000 units; one and one half years ago I gave the same child 5,000 units. So far I have had none but gratifying results.

P. N. Wentz, M.D., York, Pa.

Answer.—The possibility of an anaphylactic reaction should not prevent the use of antitoxin in a patient with diphtheria, even though he has previously received antitoxin for immunologic or curative purposes. In such persons it is advised to give a small amount (from 0.1 to 1 c.c.) subcutaneously; if no severe symptoms appear after one or two hours, the full dose may be given.

Several considerations make it difficult to state the probability of appearance of anaphylactic phenomena in any given case. In addition to individual peculiarities which no doubt play a part, the volume of serum injected and the method of preparation of the serum are important factors. Weaver (*Arch. Int. Med.*, June, 1909, p. 485) found that when the volume of serum was small (from 1 to 9 c.c.), serum disease (urticaria, erythema, arthritis, etc.) appeared in 10.9 per cent.; with increasing volumes of serum, the percentage of reactions progressively increased so that in those cases receiving from 80 to 200 c.c., serum disease was noted in 61 per cent. The more recently developed methods of concentrating and refining antitoxin yield serums of high potency, so that the necessary amount of antitoxin units is available in small volume of serum, and the probability of serum disease is accordingly decreased. The removal by the refining process of certain albumin fractions of the serum decreases the incidence of serum disease. The older statistics, therefore, probably show a higher incidence of reactions than are being obtained at present with concentrated serum.

In persons receiving serum for the first time, serum disease appears in the majority of cases from the seventh to the tenth day, but sometimes earlier or much later, and rarely need cause alarm. Of 200,000 persons injected with serum, there was but one death from anaphylactic shock (Kolle).

The reactions which follow reinjections of serum (that is, in persons previously injected) may be immediate, and in any case are likely to occur earlier than those after first injections (accelerated reactions). The immediate reactions usually present, in addition to urticaria and other symptoms of serum disease, are symptoms of respiratory disturbance, cyanosis, rapid pulse, etc., and correspond to the anaphylactic shock seen after reinjection of experimentally sensitized animals. Epinephrin and atropin have been used with benefit. Even these severe reactions are very rarely fatal. About 50 per cent. of fatal instances of anaphylaxis have occurred in asthmatics, and in some of the latter the fatality followed the first injection of serum. When the reinjection is made within six days after the first injection in man there is practically no danger of anaphylaxis; reinjection in from three to eight weeks after the first injection is followed by some degree of anaphylaxis in about 90 per cent. of cases; reinjection after six to nine months is followed by reaction in about 50 per cent. of cases (Seidel: *München. med. Wchnschr.*, 1915, lxii, 1210). With the lapse of years the percentage of reaction on reinjection is further decreased, and usually appears as an accelerated reaction.

The danger of serum reactions even in previously injected persons is so much more remote than the danger from diphtheria that the physician should not hesitate to avail himself of so potent a remedy as antidiphtheric serum.

ARTICLES ON ARNETH FORMULA

To the Editor:—Please furnish me a reference to the original article and subsequent literature on the Arneth formula.

P. L. Querens, M.D., New Orleans.

Answer.—The following is a list of references on this subject:

Arneth, Die neutrophilen weissen Blutkörperchen bei Infektionskrankheiten, Jena, G. Fischer, 1904; *Folia haemat.*, 1904, i, 492.

Briggs, L. H.: Clinical Value of Arneth Method of Blood Examination, *California State Jour. Med.*, August, 1912; abstr., The Journal, Aug. 24, 1912, p. 674.

Ringer, P. H.: Prognostic Value of Arneth's Leukocytic Blood Picture in Pulmonary Tuberculosis, *Am. Jour. Med. Sc.*, October, 1912.

Hultgen, J. F.: Arneth's Nucleo-Analytic Method as Applied to Eosinophils, *New York Med. Jour.*, Jan. 27, 1912; abst., The Journal, Feb. 10, 1913, p. 439.

Holyroyd, J. B. H.: Prognosis in Pulmonary Tuberculosis: Results Obtained by Arneth's Method, *Brit. Med. Jour.*, May 3, 1913.

Kramer, J.: Prognostic Value of Arneth Blood Count in Pulmonary Tuberculosis, *New York Med. Jour.*, June 14, 1913.

Cummings, R. S.: Arneth Blood Count in Pulmonary Tuberculosis, Report of Eighty Cases, *California State Jour. Med.*, July, 1913; abst., The Journal, Aug. 2, 1913, p. 365.

Schottstaedt, W. E. R.: Arneth Leukocytic Picture, Its Value in Prognosis of Tuberculosis, *Ohio State Med. Jour.*, February, 1914.

Henson, G. E.: Study of the Arneth Formula, The Journal, Sept. 12, 1914, p. 922.

The Arneth Formula, Queries and Minor Notes, The Journal, Oct. 31, 1914, p. 1597.

Cooke, W. E.: Arneth Count in Pulmonary Tuberculosis, *Brit. Jour. Tuberc.*, October, 1914; abstr., The Journal, Nov. 7, 1914, p. 1699.

CZAPLEWSKI'S CARBOLFUCHSIN STAIN

To the Editor:—1. Please give the formula for Czaplewski's carbolfuchsin stain, and state where it can be obtained.

2. Will Ziehl's carbolfuchsin stain the *Endameba buccalis* properly?

C. A. Sellers, M.D., Hartford City, Ind.

Answer.—1. Czaplewski's stain is prepared as follows: One gm. of fuchsin in 5 c.c. of phenol are placed in a dish; 50 c.c. of glycerin are added, with constant stirring, and then diluted with 100 c.c. of water. The constituents of the stain can be purchased from any medical supply house. We do not know where the stain may be purchased already mixed.

2. The following directions are given by Bass and Johns for staining *Endameba buccalis* properly: Spread pus on slide; fix with heat; pour on carbolfuchsin; wash off at once; stain with Loeffler's methylene blue from one-fourth to one-half minute; wash, dry and examine with oil-immersion lens.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Mississippi: Jackson, October 26-27. Sec., Dr. E. H. Galloway, Jackson.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Higher Preliminary Standard

An official communication from the secretary of the Virginia State Board of Medical Examiners states that the requirements of preliminary education by that board, according to the provisions of the medical practice act, will be automatically changed as the requirements of the University of Virginia, department of medicine, are increased. The latter has adopted, in addition to a four-year high school education, the requirement of two years of collegiate work, to become effective for all students entering in the session of 1917-1918 and thereafter. The licensing board of Virginia, therefore, will hold a similar standard as the minimum requirement of preliminary education for all graduates of 1921 and thereafter who seek licenses to practice medicine in that state.

Rules Governing Reciprocity in New Hampshire

All applicants for registration by reciprocity must appear in person before the board at Concord, N. H., and bring with them a certificate as to moral character, also documentary proofs that their preliminary education is up to the standard required by the laws of this state, and that they graduated from a Class A medical school according to the classification of the Council on Medical Education of the American Medical Association. They must also present documentary evidence that they have passed some state board examination. If the applicant's qualifications are satisfactory, on payment of the fee of $20, he will be granted a license to practice medicine in New Hampshire.

All graduates of medicine prior to the year 1907 must bring proofs of their education, both preliminary and professional, and proof that they hold a state license. Each case will be considered on its merits and, if satisfactory to the board, a license will be granted.

No person who has failed to pass the New Hampshire state examination will be considered as a candidate.

Wyoming March Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, March 10-12, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 6, of whom 5 passed; 1 osteopath did not complete the examination. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Georgetown University	(1904)	83.2
University of Louisville	(1911)	*
College of Physicians and Surgeons, Boston	(1912)	76
College of Physicians and Surgeons, Dallas	(1905)	80.4†
Medical School of Osaka	(1899)	80.4

* No grade given.
† Graduation of this applicant not confirmed by official information.

Wyoming June Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, June 28-30, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 3, all of whom passed. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Colorado	(1911)	79.1
Missouri Medical College	(1899)	76.4
Syracuse University	(1903)	84.5

Book Notices

The American Encyclopedia and Dictionary of Ophthalmology. Edited by Casey A. Wood, M.D., C.M., D.C.L., Professor of Ophthalmology, College of Medicine, University of Illinois. Volumes IV-VII. Cloth. Price, $6 per volume. Chicago: Cleveland Press, 1915.

Volumes IV, V, VI and VII of this monumental work have come from the press in rapid succession. They uphold the high standard of the early volumes both in manner of treatment of the subjects covered and in material characters. Many of the articles are by the same authors as articles found in the first three volumes. The book has now reached the end of the letter G, and of course has covered many important subjects in ophthalmology. In Volume IV, among the extended and leading articles are those on color blindness, comparative ophthalmology and congenital anomalies of the eye. Volume V contains a complete review of the subject of conservation of vision, an extremely interesting article on Jacques Daviel and the extraction of cataract, and a practical study of the cornea and its diseases. Volume VI includes articles on electricity in ophthalmology, electric magnets, exophthalmic goiter with especial relation to its ocular aspects, and a complete and helpful article on examination of the eye. Volume VII, the last of the series here considered, discusses eye glasses, the eyes of soldiers and sailors, and the use of color signals on railroads, in harbors, at sea, etc. It makes a most interesting and practical discussion of the subject. Glaucoma is given much space in the volume, and the scientific information developed to date concerning it is well and completely set forth. Much biography is scattered throughout the volumes, with portraits, in many instances, of the past masters in ancient and modern ophthalmology. Good illustrations abound throughout.

The reader is continually impressed with the fact that a vast amount of time and energy and an excellent sense of discrimination and selection have accompanied the preparation of this monumental work. It is time and energy well spent, for the value of such a series is not for a day or a year, but for generations to come.

Cancer. Its Study and Prevention. By Howard Canning Taylor, M.D., Gynecologist to the Roosevelt Hospital, New York. Cloth. Price, $2.50 net. Pp. 330. Philadelphia: Lea and Febiger, 1915.

This is a concise yet complete presentation of our knowledge of the various forms of cancer (and sarcoma). The subject is treated from historical and statistical points of view and as to etiology, clinical pathology, diagnosis and treatment. The study and prevention of cancer constitute one of the most important and at present most discussed problems confronting either laity or profession. The value of the book is enhanced by its reiteration of the necessity for early treatment. This can be brought about only through recognition of the earliest symptoms of cancer, and these the author constantly emphasizes throughout.

Medicolegal

Risk Assumed by Those Undertaking Work they Know they are Not Physically Fitted for

(Tennessee Coal, Iron & Railroad Co. vs. Moody (Ala.), 68 So. R. 274)

The Supreme Court of Alabama reverses a judgment obtained against the complainant by plaintiff Moody, an epileptic, who sued for damages for personal injuries sustained by him by falling into a pit and being burned, while in the company's employ. It appeared that he had been employed by the company at its furnaces for about nineteen years, when he began to have epileptic fits, and was laid off from work for two or three months. He was then employed to break the runway of molten cinders, or "to work the cinder fall," as he stated it. This he was accustomed to do, with or without direct orders, and was doing when he fell into the pit. He had been ordered by the superintendent thirty to forty-five minutes before, but there was no evidence of any indication then that he was going to have a seizure, although it was said that his spells gave visible indications in conduct or appearance from fifteen to forty minutes before an actual seizure. The plaintiff knew and understood his infirmity, but it did not appear that the superintendent had any knowledge of it, unless it was inferable from notoriety about the plant. The court holds that the order in question was not negligent under the circumstances, and that the plaintiff assumed the risk of injury when he undertook to do the work in which he was engaged.

The court says that the reported cases present only a few instances in which a servant has sought to recover from a master for injuries which resulted primarily from the physical unfitness of the servant for the work which he had undertaken to do. In this case it might perhaps be justly affirmed, on the plaintiff's own showing, that, with or without the order complained of, he would equally have undertaken his regular work on this occasion, with the same result, and hence that the order was not the proximate cause of his injury. But conceding that it was, the company could not be held responsible for that result.

So far as their own safety is concerned, persons not under contractual disability should be, and are allowed to determine for themselves, whether their physical infirmities, known to themselves, shall debar them from any particular employment. According to the nature and degree of their infirmities, they must be more or less exposed to dangers, naturally resulting from their attempt to serve, in almost any of the modern industries. It is no doubt a hard choice, but such persons must estimate for themselves the chances of injury, and it would be unjust as well as illogical to visit the consequences of their choice on their employers. It may be a matter of delicacy as well as difficulty for the employer to undertake in each case to determine the nature and extent of the malady or infirmity of one who offers to work, or the likelihood of injury resulting thereform; and the court thinks the employer may, without liability, legal or moral, accept the judgment of a would-be servant who knows his own condition.

Nor would the imposition of liability on the master in such cases be either politic or humane, even from the servant's point of view, since it would inevitably result in depriving of a livelihood many afflicted persons who have no choice but to labor, and who are impelled by experience or necessity to choose the more lucrative, if more dangerous, employment.

Cleanliness Now Cheaper Than Chemicals.—The European war sent the prices of benzoates from about 18 cents per pound to $2.00 per pound and then food manufacturers who claim we could not get along without benzoates, at once seem to have made a new discovery that after all benzoates are not necessary—sterilization is a cheaper food preservative than benzoate at $2.00 per pound.—*N. Dak. Agric. Experiment Station Bull.*, September, 1915.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Virginia State Medical Society, Richmond, Oct. 26-28.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

(Continued from page 1401)

Treatment of Empyema

Dr. Edward Martin, Philadelphia: In order to avoid infection from the skin, a puncture is made through the skin, deep fascia and into the muscle by means of a cataract knife. The trocar is pushed into the pleural cavity, and stopped when the resistance of the chest wall is no longer felt. The location of the pus thus having been determined, an incision 1½ inches long is made through the skin and a large trocar thrust into the pus cavity. The stylet is removed and a silver tube is passed through the cannula. The cannula is then withdrawn and the flanges of a tube are stitched to the skin by means of silver wire. The silver is not irritating to the tissues, and provides against compression or kinking, as is the case with a rubber tube. If necessary, a cupping glass or suction apparatus can be applied intermittently to produce negative pressure. Pulmonary exercises are to be instituted early. A dressing dampened with mild antiseptic solution is applied over the tube. If there is much adhesion between the pleural layers, these should be freed through a large incision in the intercostal space.

DISCUSSION

Dr. John H. Jopson, Philadelphia: My own practice has been in favor of the ordinary methods of drainage and the following of Richardson's advice to make large holes. We can do this operation early and painlessly on a child if we will carefully and systematically anesthetize everything down to the pleura. I believe we should do this under general anesthesia, local anesthesia being used only if the patient is in bad condition. I like to get a look in the chest and free light adhesions in the lungs in the early stage and remove large loose masses of lymph which will clog any tube and will probably break down and disintegrate. If one can do that and introduce the tube Dr. Martin advises, we are making a great advance.

Dr. John D. Singley, Pittsburgh: As regards breathing exercises in these cases of empyema, it has been my custom for years to have the patients use an ordinary football to blow into. The amount of pressure is limited only by the will of the patient, and it can be carried outdoors, where we like to keep these patients most of the time.

Treatment of Puerperal Infection and Septic Abortion

Dr. John M. Fisher, Philadelphia: In cases of puerperal sepsis, the severity of the infection with the same microorganism, even, varies in type from the most malignant, fatal in a few hours, to a type with symptoms so mild that in the absence of extraordinary precautions it may escape detection. I still believe alcohol to be of service in the treatment of profound toxemia characterized by feebleness of heart action, depression of the nervous centers, and the so-called typhoid states with either high or low temperature. The importance of eliminating toxic products through the excretory canals cannot be too strongly emphasized. The influence that the ingestion of water exercises on the skin and kidney is well understood. By whatever method administered it adds to the volume of the circulation, raises blood pressure, improves the quality of the heart's action, promotes nutritive changes incident to constructive and destructive metamorphosis, dilutes toxic products and promotes their elimination by its stimulating action on the kidney structure. The profession has been slow in estimating the value of outdoor life in tents or porches in the care of patients suffering from puerperal and other forms of sepsis. By the open-air treatment is meant the actual outdoor exposure of the patient and not merely her removal to a sun parlor or veranda with closed sides.

Treatment of Cancer by the Use of Radium in Conjunction with Surgery

Dr. Guy C. Boughton, Erie: Most of the cases of cancer in which radium treatment has been used have been inoperable cases; many of the patients have been almost moribund, and in this type of cases radium treatment has achieved what no other treatment could do. We would not replace surgery by radium therapy, but rather, by combination with radium therapy, make surgery more effective. The surgeon can remove the greater part of the malignant tissue, but the radium rays in suitable cases can go in and destroy all of the remaining malignant cells. In the treatment of even inoperable superficial cancers, carcinoma of the uterus, the prostate, the rectum and the breast, and in spindle-cell round-cell sarcoma, lymphosarcoma and rodent ulcers, radium has been shown to be of definite value.

Surgical Treatment for Absent Vagina

Dr. E. E. Montgomery, Philadelphia: I advise such patients not to have the operation but to accept the situation and give up the idea of marriage. Where conditions seem to make it desirable that a vagina should be constructed, it is important that it should have a lining of mucous membrane. The best plan is to line the constructed canal with a section of the intestine, utilizing a portion of either the ileum or the rectum. I prefer the latter. The lower end of the rectum above the sphincter is utilized for the vagina, and the rectal canal is reconstructed by loosening the rectum and bringing it down and making an anastomosis at the anus.

Treatment of Undescended Testes

Dr. John H. Gibbon, Philadelphia: In the early months and years of life, the mother or nurse should be instructed to draw down gently and push the testicle toward the bottom of the scrotum. If this fails by the third or fourth year, the Bevan operation should be performed. I have done this operation twenty-two times and have been surprised at the facility with which the organ can be carried into the scrotum. Eight of my patients were over 18 years of age.

DISCUSSION

Dr. R. G. Le Conte, Philadelphia: I am entirely in accord with the views expressed by Dr. Gibbon, but the manipulations for relief of the condition in infancy should be carried out very gently, or more harm than good may be done.

Free Transplantation of Fascia Lata in the Treatment of Inguinal Hernia

Dr. Francis T. Stewart, Philadelphia: The free transplantation of fascia has proved to be almost uniformly successful, and for the very reasons that were thought to render fascia unsuitable for transplantation: its poor nourishment and its lowly situation in the scale of organized tissues. This method is especially called for when the hernia is large, recurrent, sliding or direct. The best place from which to obtain the fascia is from the region just below the outer portion of Poupart's ligament. After undermining the lower edge of the skin incision for exposing the inguinal canal, the transplant is immediately sutured with catgut to the under surface of the everted margins of the transversalis fascia. The edges of this fascia are then united over the transplant.

DISCUSSION

Dr. J. S. Rodman, Philadelphia: The recurrent cases of inguinal hernia are the most troublesome, and it is here especially that the use of some material to strengthen the abdominal wall would seem to be called for. I believe that Dr. Stewart has chosen the best material of all to transplant. In operating for recurrence, the most difficult problem is to restore the anatomy to something approximating the normal. This can usually be done with the Bassini technic, and, if transplantation is added to this, it will suffice to cure the majority of such patients.

Preliminary Report of a New Method of Treating Gonococcic Virulent Conjunctivitis by Iced Normal Salt Solution

Dr. Edward B. Heckel, Pittsburgh: Ice pads have long been used in treating this malady on the theory that cold would inhibit the bacterial growth. In view of this and the assumption that gonococci are found only in superficial tissues, I have used iced normal salt solution in a few cases, and firmly believe that we have in it a specific in the treatment of gonococcal conjunctivitis. It is a harmless, effective germicide, easily applied, and well borne by the patients.

Pregnancy and Tuberculosis

Dr. Charles C. Norris, Philadelphia: Two years ago Dr. C. S. Bacon of Chicago estimated that there were in the United States alone 32,000 tuberculous women who became pregnant annually. Whether or not the normal pregnant woman is more susceptible to infection by the tubercle bacilli than her nonpregnant sister is still an undetermined point. The combined statistics of Fishberg, Funk, Jacob, Panwitz and a number of other observers in more than 1,100 cases give the proportion of women believing their infections to have originated during pregnancy or the puerperium as 39 per cent. While it is admitted that pregnancy exerts an unfavorable influence on tuberculosis, no hard and fast rule can be made, but each case must be individualized. Marriage should be advised against in the presence of an active lesion. A hard and fast rule that a tuberculous woman should not marry is too sweeping, although as a general principle this advice is correct. In cases in which conception has been countenanced, especial hygienic surroundings must be enforced, and frequent examinations should be made by an internist. In the cases of pregnancy in the presence of an extensive tuberculous lesion, even in the quiescent stage or small active lesion prior to the fifth month, the uterus should be emptied at once. This applies also when laryngeal or other secondary lesions are present. During the first six or seven weeks of pregnancy, dilatation and curettage is the operation of choice; beyond this period, vaginal hysterotomy. Practically all authorities agree that nothing is to be gained by operative intervention during the last four or five months of pregnancy. The indications, which are for treatment along general lines, should in cases of advanced tuberculosis be directed especially to obtaining a living child. A much more difficult problem is presented by the woman with a quiescent lesion of moderate extent. While it is accepted that continuance of the pregnancy is an added risk, abortion is not justifiable in every case. The patient should be studied closely and a guarded prognosis given.

DISCUSSION

Dr. H. R. M. Landis, Philadelphia: While a very considerable number of tuberculous women state that the first manifestation of the disease has occurred during pregnancy, I doubt whether any such instance is one of primary infection, but one rather of quiescent tuberculosis in which the added stress of pregnancy has lighted up the process. I have known of instances in which women after six or seven years of sterility have become pregnant, after recovery from an attack of incipient tuberculosis, without recurrence of the disease. I am opposed to the legislation advised by eugenists against the marriage of all infected persons.

Dr. Alexander Armstrong, White Haven: It is my custom to advise against the tuberculous woman bearing children until after at least five years of health. This opinion applies also to the question of marriage.

Dr. Elmer H. Funk, Philadelphia: In a series of 100 tuberculous women studied at the Jefferson Hospital, forty-three showed definite lesions dating from the beginning of pregnancy and during the puerperium. Termination of pregnancy in the earlier months gave better results than when gestation was allowed to proceed.

An Unappreciated Form of Pneumothorax

Dr. Charles Rea, York: By the "unappreciated form of pneumothorax" is meant that form coming on suddenly without obvious evidence of illness. The condition is regarded as due to rupture of air vesicles from a tearing of the pleura, probably always due to a previous pleurisy resulting in an adherence of the two surfaces. Its frequency is greater than is generally supposed. Differential diagnosis is of interest so far as extreme emphysema is concerned. General care is practically all the treatment required. Unnecessary muscular effort should be avoided until absorption of the air and obliteration of the rent have taken place. While in the majority of cases prognosis is excellent, cases have been reported in which absorption of the air had not taken place for many years. Pulmonary tuberculosis has occurred in several instances.

Therapeutic Pneumothorax in Pulmonary Tuberculosis

Dr. Alexander Armstrong, White Haven: This method of treatment has been used at White Haven for three years. The procedure consists in the introduction of gas, preferably nitrogen, into the pleural sac, compressing and eventually collapsing the affected lobe or lung. Strict asepsis is to be enjoined throughout the operation. While the lung is usually kept under compression for six months, in some cases a much longer time is essential. The rationale of the measure is to lessen expansion of the alveolar tissue and to encourage drainage of septic matter. Three indications for the treatment are: (1) progressive softening in one or more lobes of one lung, the other lung being normal; (2) relief of hemorrhage; (3) pleurisy, either dry or with effusion. A careful selection of cases is advisable, but it is not essential that treatment be restricted to those in which the disease is unilateral. In view of our results, we believe that therapeutic pneumothorax has a fixed place in the treatment of pulmonary tuberculosis.

DISCUSSION

Dr. Charles M. Montgomery, Philadelphia: I believe the cases referred to by Dr. Rea as "unappreciated pneumothorax" are not recognized as promptly as they should be, although the physical signs are sufficiently plain to be known. A number of cases have been recognized only by the Roentgen ray. Regarding pneumothorax, I know of no more encouraging report in literature. My only fear is that the impression may be received that the procedure is a simple one. It should be emphasized that its employment should be limited to experts in the work.

Dr. Isadore Kaufman, Philadelphia: A very large percentage of the cases mentioned by Dr. Rea develop in only phthisical subjects. As to therapeutic pneumothorax, I would emphasize the employment of the procedure in the earlier cases.

Case of Cholesteatoma of the Spinal Cord

Dr. William Egbert Robertson and Dr. Samuel D. Ingham, Philadelphia: A girl was taken from school when 15 years of age because of increasing languor and anemia. She was first seen, Dec. 28, 1914. There were progressive loss of flesh, intermittent insomnia, motor and sensory disturbance of the left leg, later of the right, variable in character, obstinate constipation and involvement of the bladder, with marked cystitis and a mixed spastic and steppage gait. At operation, a tumor 5½ inches long was removed, which on microscopic examination, proved to be a cholesteatoma. The patient has gained 25 pounds in weight. There is still moderate foot drop in the left leg with a little anesthesia and loss of muscle sense. There is, however, considerable gain in power, with increased size of the left leg, and the gait is almost normal.

Value of the Psychopathic Hospital

Dr. Daniel J. McCarthy, Philadelphia: Within recent years the psychiatrist and neurologist have felt the necessity of a fuller and better equipment for the care, study and prevention of mental diseases. There probably has been no greater blot on the art of medicine than the care and treatment of the insane during a period when in every other direction medicine was advancing. Effort has been directed largely to administration and custodial care of the patient rather than to the scientific study of the cause of mental diseases. Two problems facing the state are the immediate care of large numbers of insane, and the ever-increasing number of those requiring such provision. Insanity is a problem not only of the brain tissues but also of the entire economy. The psychopathic hospital should not, therefore, differ from the most advanced hospital connected with medical schools, and should be divided into the clearing house type for (1) the reception and distribution of cases; (2) the investigation of cases, and (3) the cure of borderline cases. There should be facilities in every general hospital for the temporary care of all mental cases. We should have institutions receiving not only wards of the state but also patients able to pay partial or full fees.

DISCUSSION

Dr. James Hendrie Lloyd, Philadelphia: The term "psychopathic hospital" has come to be a favorite one at the present time and one much used by persons of an optimistic turn of mind. It is meant to note progress, and is used to signify an institution different and theoretically better than that which is meant by the old-fashioned term "insane asylum." So far as the term means progress it is commendable. Progress does not, however, depend on mere words. A psychopathic hospital is, after all, nothing but a hospital for the study and treatment of the insane; one should not be deceived by a name. The treatment of the insane should be practically the same in all hospitals. I believe that a large municipal hospital offers the equipment and facilities desirable for mental cases.

Dr. George E. Price, Philadelphia: I do not entirely agree with Dr. Lloyd that the psychopathic hospital should be entirely under the care of the municipality. The great difficulty in the present situation is that people of moderate means have no hospital to which they can go, but to the municipal hospital at Blockley. Every large hospital, particularly those connected with the teaching institutions, should make provision for the mentally sick, just as they would for the man with an acute pneumonia or nephritis.

Dr. Alfred Gordon, Philadelphia: There should be a place for those persons, not insane in the true sense of the word, yet not normal mentally. Such persons, though free from delusions and capable of reasoning, are in a state of mental disquietude and cause much anxiety to their friends. For these I feel very strongly that there should be a place between the general hospital and the hospital for the truly insane. In spite of the later teaching, a stigma attaches to the placing of a patient in an insane asylum.

(To be continued)

KENTUCKY STATE MEDICAL ASSOCIATION

Sixty-Fifth Annual Meeting, held at Louisville, Sept. 21-23, 1915

(Concluded from page 1398)

Diagnosis and Treatment of Gastric and Duodenal Ulcers

Dr. J. G. McClymonds, Lexington: The decision to operate more frequently rests with the internist and with the surgeon. As a rule, there should be no disagreement. Those cases with organic pyloric stenosis, hour-glass contractions, or perforations come definitely under surgical treatment. To these we must add cases in which repeated hemorrhages occur or relapses after apparent cure persist. Again, in those cases in which improvement is slow or arrested from inability to take sufficient nourishment, surgical intervention should be considered before the patient has reached a stage of exhaustion in which surgery would be a last resort.

Digitalis: Its Indication and Manner of Use

Dr. W. W. Anderson, Newport: Next to auricular fibrillation and flutter, the occasion of highest usefulness for digitalis is in acute cardiac dilatation. This occurs whenever the heart is subjected to a too great strain without time for hypertrophy. Thus it may result from a wrestling match, a marathon race, or pumping the blood against the constriction of asthma, emphysema or pneumonia. In the last instance dilatation is favored by the toxic degeneration of the myocardium. The effect of digitalis in these cases is most satisfactory. Too many of us have been giving digitalis in every case in which a heart murmur could be detected. The drug is worse than useless in true valve disease unless compensation is broken. Digitalis in therapeutic doses has no effect on the normal heart. A heart fully compensating for an impaired valve is a normal heart for present purposes of circulation, and needs no medicine. The tincture and fluidextract are not to be compared with like preparations of other drugs for stability. If fairly fresh they represent the whole drug. The fresh infusion represents all the nastiness and most of the virtues of digitalis, but is worthless in two days. Not one of the so-called active principles, even at its best, represents the whole drug. Most of them as found in the shops are worthless. They have only the advantage of fitness for hypodermic use even when right. All active preparations of the drug tend to disturb digestion. I cannot agree with those distinguished authorities who assert that this disturbance all comes through the vomiting center, some even adding that it proves overdosing and that digitalis is not a local irritant to the stomach. If their contention were true, there would be no advantage in giving the drug by the rectum. By giving from one third to one half more by rectum, digestion is often spared and full therapeutic effect obtained. The approach of toxic symptoms may be noted in gastric irritation (hunger, pain, weight and pressure soreness) and in slow pulse. Both these effects are in part overcome by combining the drug with atropin, but this combination is liable greatly to increase blood pressure. Coupled rhythm or bigeminal pulse is the danger signal that should mean instant discontinuance of digitalis.

Gastric and Duodenal Ulcer; Surgical

Dr. Michael Casper, Louisville: The chief danger of gastric ulcers are: first, hemorrhage; second, perforation; third, cancer formation; fourth, stenosis, if in the pyloric region. Other dangers exist, such as malnutrition and chronic invalidism, which naturally predispose to other intercurrent diseases. Gastrojejunostomy is the recognized operation for gastric ulcer with excision of the ulcer. Recently Balfour's method of cautery puncture has met warm approval. All gastric ulcers should be excised or destroyed by cautery, because of cancer menace. This disputed point is about settled now, and the only question that remains is what proportion of cancers of the stomach are preceded by ulcer period. Gastrojejunostomy does most good, of course, in ulcer of the pyloric region on account of improved drainage. The causes of failure in gastrojejunostomy are: first, vicious circle; second, narrowing or closing of anastomotic opening; third, jejunal ulcer; fourth, persisting irritation of nonabsorbable inner suture; fifth, jejunal or gastrojejunal ulcer. Nearly all of these are obviated by the more improved technic of posterior, no-loop gastrojejunostomy, absorbable inner through-and-through suture being used and otherwise careful manipulation of anastomotic structures. The final results of operative procedure in gastric and duodenal ulcers compare favorably with operation on the gallbladder and appendix. The mortality is likewise reasonably low, and is being constantly lowered. We cannot too strongly emphasize the hearty cooperation of the internist and the surgeon in this class of work, not only prior to but after operation as well.

Verumontanum with Reference to Referred Symptoms

Dr. George H. Day, Louisville: The etiology of these conditions discloses some very interesting information. In our series of nearly 200 cases, only about 80 per cent. gave the history of a preceding gonorrhea; 20 per cent. were found in men with a negative venereal history. In the gonorrheal type, a large majority had a complicating infection of the prostate and seminal vesicles, some singly and some both. Again, quite a number were observed with a history of an infection years previously and absolutely clear urine, normal vesicle and prostate, with an enormous tender verumontanum, together with resulting neurotic symptoms. In the acute or subacute infectious types the verumontanum takes a many-sided picture of pathologic changes. The sinus pocularis in these cases is usually widely gaping, simulating closely the existing anatomic changes, as attends the urethral orifices in a kidney infection. The causes of these conditions are divided naturally into those giving a history of a previous infection and those with a negative venereal history. It is in the cases with a negative venereal history that the best results are noted. The open air endoscope offers a useful place in the treatment of these disorders, and, while a great many drugs have been suggested, in my hands silver nitrate in varying solutions has been the agent *par excellence.* It has been my habit after thoroughly drying the verumontanum and adjacent tissues with dry applicators to apply varying strengths of silver, either 10, 20, 30 or 50 per cent., as is tolerated by the patient. It is necessarily wise to suggest that the treatment is rather painful and the reaction from the silver at times rather severe, but with a proper selection of cases and the solutions discriminately applied, amazing results are usually obtained. It is my habit to apply them at weekly intervals over a period of more or less length of time. It is wise after the application of the silver to allow it to dry thoroughly. The excess is always to be removed, before the endoscope is withdrawn.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

October, X, No. 4, pp. 229-312

1 *Chemical Study of Woman's Milk, Especially Its Inorganic Constituents. L. E. Holt, A. M. Courtney and H. L. Fales, New York.
2 *Studies in Adaptation of Artificial Food to Human Milk. H. J. Gerstenberger, H. D. Haskins, H. H. McGregor and H. O. Ruh, Cleveland.
3 *Extensive Purpuric Eruptions in Epidemic Meningitis. E. A. Morgan, New York.
4 *Tonsillar Manifestations in Early Diagnosis of Measles. C. Herrman, New York.
5 Total Nonprotein Nitrogen and Urea of Blood and Phenolsulphonephthalein Excretion in Children. W. Tileston and C. W. Comfort, New Haven, Conn.
6 *Atropin Treatment for Exudative Diathesis in Infancy. J. S. Leopold, New York.

1. Study of Woman's Milk.—In the colostrum period woman's milk, according to the authors, has high protein and high ash with rather low fat; in the transition period the protein and ash are lower while the fat is higher; in the mature period (after one month) the composition of normal milk does not vary in any essential or constant way quite up to the end of lactation. The only striking feature of late milk is a decline in quantity, though there is noted a slight fall in all the solid constituents except the sugar. Of the different constituents of milk the least variation both in individuals and in periods is seen in the sugar. The proportion of this is somewhat higher than the generally accepted 7 per cent.; 7.5 per cent. is nearer the correct figure. The greatest individual variations are seen in the fat, though the period variations in fat are not marked. The protein is highest in the colostrum period and falls to a little over half the proportion in mature milk, during which period it is seldom over 1.25 per cent.; of this about one-third is casein, and two-thirds lactalbumin.

The high ash of the colostrum period is chiefly due to the amount of Na_2O and K_2O. Of the salts which make up the ash, the greatest individual, as well as the greatest period, variations are seen in the Na_2O; the least individual and period variations are seen in the CaO, the proportion of which is nearly constant throughout the period of lactation. The largest constituent of the ash of woman's milk is K_2O; this with the CaO together make up more than half the total ash.

Although in amount the total ash of cow's milk is about three and one-half times as great as that of woman's milk, the proportion of different salts which make up the ash is nearly the same, the only exceptions being that cow's milk has more P_2O_5 and less iron.

2. **Artificial Milk.**—By mixing varying proportions of different animal and vegetable fats Gerstenberger and his associates found that it is possible to get a fat that in its Reichert-Meissl number (small per cent. of low volatile fatty acid glycerids), saponification number, iodin number, and other characters, is nearly identical with the fat of human milk, as has previously been shown by Arnold. By replacing in an artificial milk cow's-milk-fat with the fat of the above description in an emulsified state (homogenized), a distinct step in advance toward the more complete adaptation of an artificial food to breast milk is made. It is also possible to take into consideration the "growth factors," "vitamine factors," and the like, in choosing the individual fats for an acceptable mixture. This represents a further step in the more complete adaptation of an artificial milk to human milk. The homogenizer represents the important means by which the mixing and emulsification of the fat in the artificial milk is possible. The homogenizer also changes the physical condition of the fat (smaller globules, brownian movement), which may be of advantage.

The meager clinical data suffice to show that the infants fed with Friedenthal's milk in which the cow's-milk fat has been replaced by a fat with a low volatile fatty acid glycerid content, similar to that of human milk fat, vomit less and have more normal stools than the children reported by Bahrdt, and fed with Friedenthal's milk containing unchanged cow's-milk fat. Washing butter with cold or hot water does not remove the low volatile fatty acids from butter, except in an insignificant degree. Washing butter with hot alcohol does remove the low fatty acid glycerids to a decided degree. The manufacture of a food like G-R milk can be arranged to give a very low bacteriologic count. The production of milk like G-R milk can be made at a reasonable cost.

3. **Purpura in Meningitis.**—The unusual features of the two cases cited by Morgan were: 1. The character and distribution of the eruption, which was unlike the usual purpura hemorrhagica and which though differing greatly in degree was almost identical in both patients. 2. Paucity of other meningeal signs, such as opisthotonos and other manifestations of increased muscle spasm. 3. Demonstration of the specific organism in the blood of both patients, though attempts to grow the same organism from the skin lesions were unsuccessful. 4. Refutation of the old theory that the extent and color of the eruption was of prognostic aid. In both the above cases the meningeal manifestations were no more marked than usual, and were quite amenable to treatment. 5. Both cases were sporadic as far as could be learned by investigation of the locality and by a study of the Board of Health daily bulletin.

4. **Tonsillar Spots in Measles.**—Tonsillar spots in measles were observed by Herrman in thirty-five cases (40 per cent. of the eighty-eight cases examined). In 9 patients they were present one day before the eruption appeared; in 11 patients two days, in 7 patients three days, in 5 four days, in 2 six days, in 1 nine days before the eruption appeared. In 30 of the 35 patients Koplik's spots were observed, in 14 patients one day before the eruption appeared, in 15 two days, in 1 three days before the eruption appeared. In 13 patients the tonsillar spots were seen one day before Koplik's spots; in 3 two days, in 2 three days, in 1 four days, in 1 seven days before Koplik's spots. In 5 patients the Koplik's spots were seen 1 day before the tonsillar; in 5 patients the Koplik's spots were seen on the same day as the tonsillar spots, and in 5 patients the Koplik's spots were not seen, so that the interval could not be determined. In 12 patients the spots were visible for one day; in 17 two days, in 6 for three days. At the time when the spots were first seen, the temperature was less than 100 in 6 patients, between 100 and 100.5 in 6, between 100.5 and 101 in 3, between 101 and 101.5 in 8, between 101.5 and 102 in 2, between 102 and 102.5 in 7, between 102.5 and 103 in 1, and between 103 and 103.5 in 2 patients.

6. **Exudative Diathesis.**—During the past year Leopold has administered the atropin treatment to ten infants suffering from symptoms of the exudative diathesis—severe eczema, bronchitis or asthma. Mild cases were not treated. The patients were all institutional babies ranging in age from 4 months to 2 years, and were under constant medical supervision. The results of the atropin treatment on the lesions of the exudative diathesis were excellent; and this despite the fact that no changes in diet were made, and no other drugs administered. One infant died during the period of observation. In this patient atropin had a beneficial effect on the eczema, but in no wise influenced the pulmonary condition, death following a terminal bronchopneumonia.

Atropin was used in a solution of 1 grain of atropin sulphate to 480 drops of water. Three drops of this solution were given on the first day of treatment, and if no untoward effects were observed, the dose was increased 1 drop daily until patients received about 30 drops daily (equivalent to 1/16 grain of atropin sulphate). This last dose was given daily for one or more weeks until the manifest signs of the exudative diathesis had disappeared. Smaller doses were then administered for a few more days or weeks. In only one case did untoward manifestations appear; they were very mild, and did not recur after the initial dose of the atropin solution had been reduced. In no case was there any harmful result from the atropin treatment. It was clearly evident from the beginning that infants suffering from exudative diathesis were able to take large doses of atropin sulphate without showing toxic effects.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

September, LXXII, No. 3, pp. 385-576

7 Need of Instructors and Inspectors as Hospital Officers. R. L. Dickinson, Brooklyn.
8 Roentgen Ray Treatment of Uterine Fibroids. S. Stern, New York.
9 *Choice between Operation and Roentgenization of Uterine Fibroids. R. T. Frank, New York.
10 *Modification of Technic of Abdominal Cesarean Section. W. M. Brown, Rochester, N. Y.
11 *Contracted Pelvis and Difficult Labor. M. Hornstein, New York.
12 Carcinoma Uteri. L. W. Strong, New York.
13 Mentally Backward Child from Standpoint of Neurologist. M. Neustaedter, New York.

9. **Operation of Uterine Fibroids.**—Frank claims that the Roentgen ray cannot be used with safety: In rapidly growing tumors; in cases of metrorrhagia in which complete preliminary curettage with microscopic examination of the curettings is not feasible; in complicated cases in which ovarian cysts or serious adnexal trouble cannot be excluded; in fibroids complicating pregnancy. The rays should not be used in cases in which expense is a factor or in cases in which time is a factor. The rays are of chief value in cases in which operation is declined, in cases in which operation is contraindicated by serious heart, renal or pulmonary lesions, or in cases in which operation is contraindicated because of extreme psychical unrest. Consequently Roentgen-ray treatment is applicable to at the most 5 to 6 per cent. of all patients having fibroids.

10. **Abdominal Cesarean Section.**—A slight modification of the Davis operation is practiced by Brown. He makes the incision in the usual manner, about 10 cm. long and entirely above the umbilicus, if possible. By pressure on the sides of the abdomen an assistant holds the uterus firmly up against the abdominal incision while the cut in the uterus is being made. When the uterus has been carefully opened, and before the child is delivered, the uterine cut is sewed to the abdominal wound either with eight or ten interrupted sutures, or possibly by a continuous suture. The uterus is then emptied of child, placenta and membranes. It is impossible for the uterine viscera to get into the peritoneal cavity or for the abdominal contents to get into the way of the operator. In closing this

incision Brown finds that it is quite easy to place the whole of the first row of uterine muscle sutures before the temporary sutures are removed. By leaving the permanent sutures in the upper and lower angles of the incision long they are convenient for holding the uterus up in view while the last stitches are being taken. Brown has used this method now in four cases.

11. **Contracted Pelvis and Difficult Labor.**—Small external measurements when they are all proportional with an external conjugate of 15 cm. or over, provided they are found in a woman whose slender build accounts for a small pelvis, Hornstein insists deserve a fair test of labor. They usually have small children and will deliver spontaneously if the fetus presents favorably. A fair test of labor in a doubtful case and especially in a primipara must include a period of four to six hours in active labor with the membranes ruptured, although as a rule, three hours will decide the outcome. Cesarean section for relative contraction in a primipara, means repeated cesarean for subsequent children, whereas extraction of the child through nature's passages, even if it should result in a stillbirth, will enable the woman to deliver her subsequent children per viam naturalem, since a good deal of resistance which is encountered in primiparae is due to the soft parts.

American Journal of Physiology, Baltimore

October, XXXVIII, No. 4, pp. 415-494

14 *Studies in Experimental Glycosuria. Level of Blood Sugar in Dog Under Laboratory Conditions. J. J. R. Macleod and R. G. Pearce, Cleveland.
15 *Id. Sugar Retaining Power of Liver in Relationship to Amount of Glycogen Already Present in Organ. J. J. R. Macleod and R. G. Pearce, Cleveland.
16 *Differential Effects of Epinephrin on Splanchnic and Peripheral Arteries. F. A. Hartman, Boston.
17 Osmotic Properties of Calcium and Magnesium Phosphate in Relation to Those of Living Cells. E. B. Meigs, Philadelphia.

14. **Level of Blood Sugar in Dog.**—Macleod and Pearce point out that although the blood sugar level in an anesthetized animal does not remain unchanged from time to time, yet the changes occurring during a period of ten minutes are small when compared with those observed on blood similarly removed from animals in which the splanchnic or hepatic nerves were stimulated.

15. **Influence of Glycogen on Sugar Storage of Liver.**—Briefly summarized, the authors' experiments showed that the existing glycogen content of the liver does not demonstrably influence the rate with which this organ removes dextrose from the blood of the portal vein. The following points were noted: 1. The quicker rise in sugar concentration in the portal blood than in that of the vena cava. 2. The delay, after discontinuing the injection, in the return to the normal level of the sugar concentration of the blood of the vena cava and frequently also in that of the portal vein.

16. **Effect of Epinephrin on Splanchnic and Peripheral Arteries.**—Hartman found that dilute epinephrin slowly injected caused a fall in general blood pressure in forty-eight out of fifty-three animals tried. Three of the animals in which a fall did not occur, were in poor physical condition and one was just recovering from the effects of alcohol. Dilute epinephrin caused dilatation of the peripheral arteries even after extremely low pressures had been produced by hemorrhage. The same dose of epinephrin caused constriction of the splanchnic arteries. When the blood pressure was lowered by depressor stimulation, the same dose of epinephrin caused a fall, a rise and fall or a pure rise, depending somewhat on the height of the pressure. The average latent period for the peripheral fall in the blood pressure (from doses of 0.2 c.c. epinephrin, 1:100,000) was 15.7 seconds; the latent period for the splanchnic rise was 18.6 seconds. The duration of the splanchnic rise was 37.8 seconds, while the duration of the peripheral fall was fifty-nine seconds. The threshold for the change of a fall to a rise in the peripheral arteries, when epinephrin was injected (in three animals only) over a period of from ten to twenty seconds, was betweetn 0.1 and 0.3 c.c. of a 1:10,000 solution. Large doses of ergotoxin phosphate inhibit the splanchnic response to dilute epinephrin. The existence of sympathetic vasodilator nerves in the peripheral arteries and their absence in the splanchnic arteries would account for the opposed action of like doses of dilute epinephrin on the peripheral and splanchnic arteries.

Boston Medical and Surgical Journal

October 7, CLXXIII, No. 15, pp. 527-564

18 *Our Criminal Problem from Standpoint of Classification and Segregation. E. R. Spaulding, Framingham.
19 *Blood Pressure Determinations, Urinary Findings and Differential Blood Counts in Group of Young Male Adults. R. I. Lee, Boston.
20 *Gastric and Duodenal Ulcers. C. Graham, Rochester, Minn.
21 Use of Calcium in Treatment of Epilepsy. J. Bryant, Boston.
22 Synchronous Inspiration and Systole in Patient Exhibiting Equal Respiratory and Pulse Rates. P. D. White, Boston.

18. **Criminal Problem.**—If the criminal problem is one of treatment of the individual for his deficiencies rather than of punishment for the crime committed, Spaulding says that the following fundamental provisions for the administration of such treatment are necessary: 1. Adequate provision by the state for the permanent custodial care of all committable cases of mental defect, whether or not they have a court record. 2. The establishment of laboratories in their courts and correctional institutions for the study and diagnosis of all offenders. The equipment of all their institutions with facilities for classification and treatment of the various types which will remain even after the removal of the most defective. Such a classification will necessitate separate buildings, at least one of which should be equipped for hydrotherapy. The adoption of an indeterminate sentence, which shall enable us to treat patients until they are able to return with safety to the community. The physician has it in his power to do much toward educating the public to the need of fundamental measures of reform and toward counteracting the tendency toward superficiality of some enthusiastic believers in universal reform. His knowledge of mental and physical defect enables one to see more than the cross section of the subject, which is represented by the population at present confined in their penal institutions, and to appreciate the social and economic waste which is the result of their past neglect of generations of inefficients in the community.

19. **Blood Pressure Determinations.**—Lee examined 662 normal young men, the average age 18, average height 5 feet 8 inches, average weight without clothes, 143 pounds. The average systolic pressure was approximately 120 mm. of mercury; the average diastolic pressure 80 mm. Eighty-five, or 12.8 per cent., of the 662 presented systolic blood pressure readings over 140. The highest reading was 180. The diastolic pressures were found to be much more uniform. There was comparatively little variation between the readings in the recumbent and standing positions. The average was 80. Only five cases had a diastolic blood pressure over 100. All these five cases presented systolic blood pressures over 140, but only one of them presented a systolic pressure over 160. Of the five who presented diastolic blood pressures over 100, no other abnormality was found in three patients.

Of this group of eighty-five cases, 9 (or 10.5 per cent.) showed albuminuria. The percentage of albuminuria in the total 662 men was 5.1 per cent. In only one case with albuminuria was the systolic pressure in either the standing or recumbent position over 160. In seven of the eighty-six cases, a definite valvular lesion of the heart was found. One of these patients also presented albuminuria. In one patient a slight goiter was present. Another case of obesity presented a persistently high blood pressure. Five patients showed sugar in the urine; in two patients the sugar immediately cleared up and has not reappeared. Blood smears were made in every case. Only five patients presented a polynuclear leukocytosis of over 75 per cent. Only four patients showed an eosinophilia of over 5 per cent.; the reasons for these were not apparent. Seventy-three patients showed a lymphocytosis of over 50 per cent., but in no instance was the lymphocytosis over 60 per cent. In 153 cases the lymphocytes were between 40 and 50 per cent. of the white cells. In other words, 231 of the 564 cases showed a lymphocyte count between 40 and 50 per cent. The red cells were essentially normal in every case.

20. **Gastric and Duodenal Ulcers.**—According to Graham 72 per cent. of duodenal cases seen at the Mayo clinic in the past nine years gave fairly regular symptoms and 71 per cent. of gastric cases gave the expected syndrome, or were so clearly gastric that little hesitancy was felt in making a diagnosis. Pain is the one constant diagnostic factor in all peptic ulcers. Less than 1 per cent. of patients are recorded free from pain. The time of pain has some distinctive diagnostic significance. In the duodenal ulcers the pain came one-half to two hours after food in 23 per cent. of cases, and two to five hours in 77 per cent. of the cases. In gastric ulcers the time limits of one-half to two hours included 50 per cent. and two to five hours an equal number. In 20 per cent. of the duodenal and in 19 per cent. of the gastric ulcers the time of pain was not recorded. Eight per cent. of the patients with duodenal ulcer and 19 per cent. with gastric ulcer had pain within one-half to one hour after eating.

Pain at night appeared to be more decidedly frequent in duodenal ulcer, while ease from posture (lying down) seemed decidedly more frequent in gastric ulcer. However, the final analysis gives 14 per cent. of the patients with duodenal ulcer and 10 per cent. of those with gastric ulcer having pain at night. Postural ease was noted in 8 per cent. of the duodenal and in 9 per cent. of the gastric cases. These figures correspond much more closely than one would suppose from impressions gained in history writing. Continuous pain from the beginning of symptoms was mentioned in 4 per cent. of the duodenal and 9.5 per cent. of the gastric cases. Tenderness to touch was recorded in 41 per cent. of the duodenal and 40 per cent. of the gastric histories. The location and radiation of pain was noted as follows: Of the duodenal ulcers 49 per cent. were well confined to the epigastrium, 52 per cent. of the gastric were similarly located. Those with radiation to the back ran 24 per cent. duodenal and 22 per cent. gastric. In the diagnosis gallstones were considered certain or were given first place in 13 per cent. of the duodenal and in 9 per cent. of the gastric cases. Radiation to the left epigastric area occurred twice as often in gastric (10 per cent.) as the duodenal cases (4 per cent.). The percentage of radiation to the abdomen and fossae was quite similar (9.5 per cent. duodenal, 9 per cent. gastric). Radiation to right epigastrium was present in 6.6 per cent. of the gastric and in 13.7 per cent. of the duodenal cases. Therefore, tenderness to touch, radiation of pain, and the patient's ability to locate his subjective pain gave little basis on which to arrive at a differentiation. Vomiting was recorded as occurring in 79 per cent. of the duodenal and in 82 per cent. of the gastric ulcers, while gas was present in 77 per cent. of the duodenal and in 94 per cent. of the gastric.

History of hemorrhages by mouth was recorded in 18.5 per cent. of duodenal and in 25 per cent. of gastric cases. Blood by the bowels was similarly recorded in 18 per cent. of duodenal and in 24 per cent. of gastric cases. Perforation ran about equal in both classes (duodenal 28.7 per cent., gastric 26 per cent.) and of those that perforated, the pancreas received the perforation in 17 per cent. of the duodenal and in 25 per cent. of the gastric cases. Pain to the back, which more or less simulated gallstones radiation, ran about equal (24 per cent. duodenal, 22 per cent. gastric) in two conditions, all cases considered.

California State Journal of Medicine, San Francisco

September, XIII, No. 9, pp. 333-374

23 Typhoid. W. W. Behlow, Boston.
24 Statistics of My New Advancement Operation; Report of Cases. R. O'Connor, Oakland.
25 Diagnosis of Congenital Syphilis. H. H. Yerington, San Francisco.
26 Gastro-Intestinal Symptoms in Diseases of Circulatory System. W. W. Kerr, San Francisco.
27 *Benzene Treatment of Leukemia. W. W. Boardman, San Francisco.
28 Blood in Leukemia. H. R. Oliver, San Francisco.
29 Roentgen Ray Treatment of Leukemia. H. E. Ruggles, San Francisco.
30 Shall the Medical Society of State of California Have Examining Board? W. T. Barry, Santa Barbara.
31 Routine Examination in General Hospital for Diphtheria Carriers and Note on Schick Reaction. W. T. Cummins, P. K. Brown and C. L. Bittner, San Francisco.
32 Banti's Disease. H. H. Lissner, Los Angeles.

27. **Benzene Treatment in Leukemia.**—The principle of the treatment is considered sound by Boardman. He believes that with proper precautions, there is no appreciable danger in using benzol. The improvement is a real improvement and not due to accumulation of the leukocytes in the central vessels. The improvement is only temporary, as in their other methods of treatment. The treatment is applicable in all chronic cases of leukemia. Bronchitis and anemia cannot be considered contraindications. The presence of nephritis is a more serious complication and demands more careful consideration. The treatment is more readily administered and is less costly than the Roentgen ray and may be given to those unable to obtain Roentgen ray. The percentage of improvements is about the same under benzol as under Roentgen ray.

The drug is best administered in freshly filled gelatin capsules with an equal amount of olive oil; the maximum daily dose not to exceed 5 gm. The treatment must be carefully controlled by frequent blood and urine examinations and discontinued if there is evidence of kidney irritation, or when the leukocytes reach values of 25,000 to 20,000. The best results follow the combined benzol and Roentgen-ray treatment, the benzol effect apparently being increased by a preliminary Roentgen-ray treatment. Some cases will not respond to benzol in the usual dosage and in the usual time, and other patients are unable to take the drug owing to gastro-intestinal disturbances, etc. When carefully administered and carefully controlled, benzene is apparently a valuable addition to the methods of treating chronic leukemia.

Illinois Medical Journal, Chicago

September, XXVIII, No. 3, pp. 161-240

33 Clinical Problems in Connection with Some of the Complications of Acute Otitis Media. G. E. Shambaugh, Chicago.
34 Sympathetic Ophthalmia; Report of Case. R. Blue, Chicago.
35 Non-Suppurative Sinus Disease in Relation to Eye. J. A. Cavanaugh, Chicago.
36 Blind Spot. H. S. Gradle, Chicago.
37 Syphilis of Internal Ear. G. H. Mundt, Chicago.
38 Foreign Bodies in Respiratory Tract. S. A. Friedberg, Chicago.
39 Focal Infections with Special Reference to Tonsil. F. Brawley, Chicago.
40 Diagnosis of Otosclerosis. G. W. Boot, Chicago.
41 Urinary Analysis in Treatment of Nephritis. B. G. R. Williams, Paris.
42 Congenital Hypertrophic Stenosis of Pylorus. F. B. Riley, Chicago.
43 Effects of Harrison Narcotic Law as Observed in Jacksonville State Hospital. T. G. McLin, Jacksonville.
44 Empyema, Thrombosis and Embolism with Sudden Death Following Laparotomy; Cases Reported. F. C. Schurmeier, Elgin.
45 Organization Crying Need of the Hour. L. G. Burroughs, Collinsville.
46 Agar Culture Medium. J. E. Huber, Peoria.

Iowa State Medical Society Journal, Des Moines

September, V, No. 9, pp. 351-390

47 Etiologic Factors in Uveal Tract Diseases and General Examinations Required to Determine Their Presence and Decide on Treatment of Lesions They Produce. G. E. De Schweinitz, Philadelphia.
48 Early Acquired Spastic Paraplegia, Associated with Hypothyroidism and Ichthyosis; Report of Case. T. B. Throckmorton, Des Moines.
49 New Serum Treatment for Epilepsy. W. Held, Chicago.
50 Limitations of Surgery in Treatment of Pelvic Inflammations. P. Findley, Omaha.
51 Laboratory as Aid to Diagnosis. T. H. Glenn, Fort Dodge.

Journal-Lancet, Minneapolis

September 15, XXXV, No. 18, pp. 495-524

52 Future of Minnesota State Board of Health. H. M. Bracken, St. Paul.
53 Some Impressions on Goiter Question. R. H. Ray, Garrison, N. D.
54 Urinary Symptoms in Appendicitis. P. D. Peabody, Webster, S. D.
55 Neosalvarsan in Pernicious Anemia. M. C. Piper, Sanborn.
56 Twilight Sleep. C. J. Lavery, Aberdeen, S. D.
57 Divulsion of Pylorus for Spastic Contractions and Constrictions Due to Pathologic Changes Causing Partial Stenosis. J. E. Engstad, Minneapolis.

October 1, No. 19, pp. 525-554

58 Relation of Ocular Disease to General Medicine. C. E. Spicer, Valley City, N. D.
59 *Four Cases of Congenital Fracture of Clavicle. S. M. Johns, Velva, N. D.
60 Pathologic Laboratories of Great Britain. H. E. Robertson, Minneapolis.
61 Esophagoscope in Diagnosis of Diseases of Gullet. W. Lerche, St. Paul.
62 Infant Mortality in Minnesota. C. Easton, White Bear.

59. **Congenital Fracture of Clavicle.**—Johns' patients were brothers, aged, respectively, 24, 17, 14 and 12 years. The parents are living and in good health. There is another brother, 22 years of age, and one sister, 15 years of age, each in good health. No children of these parents are dead. The parents are farmers. These sons were reared on a farm, and now reside with their parents. One aunt, 35 years of age, is rachitic, the disease being of congenital origin and in a most severe form. With this exception, no other rachitic tendency is known among the relatives. There was an absence of a traumatic history in all four cases. None of the brothers had any knowledge of the existence of fractures. They had not experienced any inconvenience or pain from them, except the oldest brother, who suffered slight pain in his shoulder, when performing labor which exerted the shoulder muscles. Each of these cases show dystrophic conformation of other bones, more commonly of the cranium and thorax. In each the frontal bones are prominent. In one there is a flattened occiput. The ribs in two are of irregular curve, producing the barrel-shaped chest. The sternum in one shows imperfect development. There was irregular dentition in one, lordosis in one, and talipes varus in another.

Lancet-Clinic, Cincinnati

September 25, CXIV, No. 13, pp. 261-288

63 Tuberculosis Problem. S. H. von Ruck, Asheville, N. C.
64 Medical Referee. D. W. Layman, Indianapolis.
65 Dental Department of Cincinnati General Hospital. H. MacMillan, Cincinnati.
66 Morphin Habit; Report of Cure. A. E. Osmond, Cincinnati.
67 Practical Importance of Anamnesis in Diagnosis in Psychiatry. C. E. Kiely, Cincinnati.

Laryngoscope, St. Louis

September, XXV, No. 9, pp. 603-674

68 Experimental Studies of Effect of Various Atmospheric Conditions on Upper Respiratory Tract. G. H. Cocks, New York.
69 Papilloma of Larynx. T. Hubbard, Toledo.
70 Texas Screw-Worm Infection of Entire Nose and Throat Including Accessory Sinuses. S. Israel, Houston, Tex.
71 Theory of Tonsillectomy, Results in Pediatrics. S. Blum, San Francisco.
72 Examination of One Hundred and Six Cases of Nasal Accessory Sinusitis, Showing Value of Routine Examination and Certain Internasal Operative Procedures. J. J. Sullivan, Scranton, Pa.
73 New Support for Suspension Laryngoscope. S. Iglauer, Cincinnati.
74 New Bivalve Laryngeal Speculum. H. L. Lynah, New York.

Medical Record, New York

October 9, LXXXVIII, No. 15, pp. 593-638

75 Cardiovascular Renal Disease (Arteriosclerosis). L. F. Bishop, New York.
76 Simplified Treatment of Anorectal Affections; Rectal Constipation; Résumé of Intestinal Stasis. S. G. Gant, New York.
77 Diagnostic Value of Bence-Jones Albumin in Early Stages of Case of Multiple Myeloma. G. H. Sexsmith and E. Klein, Bayonne, N. J.
78 Exudates in Artificial Pneumothorax. L. S. Peters, Albuquerque, N. M.
79 Relation of Nasal Symptoms to Endamebic Infections of Nose and Mouth. A. C. Howe, Brooklyn.
80 Use of Pituitary Extract. S. W. Bandler, New York.
81 An Unusual Case of Masturbation. J. A. Gilbert, Portland, Ore.
82 Effect of Intravenous Injections of Radium on Persistent Positive Wassermann Reaction. W. Ayres, New York.
83 Simple Practical Needle for Intravenous Injections. H. R. A. Graeser, New York.

Michigan State Medical Society Journal, Grand Rapids

September, XIV, No. 9, pp. 453-500

84 Observations of Three Thousand Five Hundred Ninety Obstetric Cases. G. G. Barnett, Ishpeming.
85 Syphilis of Liver, Imitating Cirrhosis. A. I. Lawbaugh, Calumet.
86 Bronchoscopy and Esophagoscopy. H. M. Cunningham, Marquette.
87 Case of Mesenteric Chylous Cyst. R. C. Winslow, Sault Ste. Marie.
88 Three Cases of Dislocation of Semilunar. A. S. Kitchen, Escanaba.
89 General Paresis of Insane. F. C. Bandy, Newberry.
90 Usefulness of State Hospital. E. H. Campbell, Newberry.
91 Clinical Thermometer in Bladder. R. H. Crissey, Lansing.
92 Diagnosis and Treatment of Peptic Ulcer. H. B. Schmidt, Ann Arbor.
93 Case of Squamous Celled Carcinoma of Skin Following Empyema. W. A. Hoyt, Ann Arbor.
94 Three Human Hearts Showing Double Superior Venae Cavae. R. E. McCotter, Ann Arbor.
95 Case of Restoration of Upper and Lower Lids of Both Eyes. R. W. Selby, Ann Arbor.

Military Surgeon, Chicago

September, XXXVII, No. 3, pp. 207-310

96 March and Rail Trip by Sanitary Troops. W. W. Reno, U. S. Army.
97 Duties of Ambulance Companies. L. L. Hopwood, U. S. Army.
98 Field Hospital Tour of Duty, Sparta, Wis. F. W. Foxworthy, Ind. N. G.

Modern Hospital, St. Louis

September, V, No. 3, pp. 145-220

99 Geisinger Memorial Hospital, Danville, Pa. H. L. Foss, Rochester, Minn.
100 Occupation of Patients in State Hospitals for Insane. H. P. Frost, Dorchester Center, Mass.
101 Physician's Part in Making Small Hospital Successful. C. H. Cook, Natick, Mass.
102 Haverford College Infirmary and Dispensary. Baily and Bassett, Philadelphia.
103 Nervous and Mental Diseases in Curriculum. F. P. Norbury, Jacksonville, Ill.
104 Old Building Reconstructed into Excellent Children's Hospital. A. L. Goodman, New York.
105 Foods That Are Marketed in Small Packages. J. P. Street, New Haven, Conn.
106 Painless Childbirth and Hospital. C. H. Davis, Chicago.
107 Medicine and World War. G. D. Stewart and J. W. Draper, New York.
108 Operating Room. H. O. Collins, Minneapolis.
109 Efficiency and Progress in Hospitals. H. Wright, Cleveland.
110 Significance of Hospital Rating. F. E. Chapman, St. Louis.
111 Interdependence between Hospital and Outside Work. R. M. Bradley, Boston.

New York Medical Journal

October 9, CII, No. 15, pp. 737-784

112 *Gonorrhea Complement Fixation Test. A. A. Uhle and W. H. Mackinney, Philadelphia.
113 Autolysin Treatment for Cancer. C. Pope, Louisville.
114 Inoperable Cancer Treated with Autolysin; Report of Cases. E. H. Williams, Los Angeles.
115 Id. H. G. Nicholson, Charleston, W. Va.
116 Autolysin Treatment of Inoperable Malignant Neoplasm. A. Wilson, Wheeling, W. Va.
117 Treatment of Fractures of Upper End of Humerus. R. E. Davison, Pittsburgh.
118 Broader View of Mental Deficiency in Aliens. H. A. Knox, Ellis Island.
119 Weight Reduction. R. H. Rose, New York.
120 Abuse of Insanity Plea as Defense for Crime. M. A. Hays, New York.
121 Backache. S. Epstein, New York.

112. **Gonorrhea Complement Fixation Test.**—This paper is based on a study of 155 gonorrhea complement fixation tests, in which the serums of 141 individuals were tested by each of four competent serologists. The blood was withdrawn with a dry sterile needle from a vein in the forearm, collected in four sterile test tubes of 5 c.c. capacity each, and one tube was sent to each serologist. When more than one specimen of blood from the same individual, withdrawn at the same time, was submitted, different names were used. Of the 141 patients, fifteen were normal controls who never had gonorrhea; thirty-seven suffered from other diseases, and all denied ever having had gonorrhea, and presented no clinical evidences of infection; the remaining eighty-eight have or have had gonorrhea. Of the fifteen series of tests on normal people in the present group, reported by each of the four serologists, only one laboratory, B, reported negative in each case. The percentage of positive reports by the other three serologists varied from 6.6 to 13.3 per cent. In the next group of thirty-seven patients, none of whom presented clinical evidences of gonorrhea, laboratory B again reported negative in each case, while the other three laboratories vary in their proportion of positive findings from 13.5

to 35.1 per cent. Of these thirty-seven patients positive reports were submitted by one or more of the laboratories in twenty-one cases; two laboratories reported positive reactions in eight cases and one laboratory in the remaining thirteen.

Of the eighteen patients clinically cured for over five years, all laboratories agree in a negative report in eight; one laboratory reports a positive in four cases; two laboratories a positive in five cases, and three laboratories a positive in one case. Of eleven patients with acute gonorrhea of less than four months' duration, all the laboratories agree in a negative report in three cases. Six patients had uncomplicated chronic urethritis; twelve had chronic urethritis with a history of previous epididymitis, and twelve chronic gonorrheal prostatitis. A positive report was received: In ten cases from one laboratory, in seven cases from two laboratories, and in two cases from three laboratories. In the remaining eleven, all reports show negative findings. Of the patients with acute gonorrhea with complications, three had epididymitis, three arthritis, and one iritis. In two cases, both of epididymitis, uniform negative reports were submitted. In two cases there were one positive and three negative reports; in two other cases there were three positive and one negative report, and in one case four positive reports. Of the 141 cases, excluding all anticomplementary reactions, there were 128 tests reported by each serologist; fifty-one or 39.9 per cent. agree, and seventy-seven or 60.1 per cent. disagree.

Ophthalmic Record, Chicago

October, XXIV, No. 10, pp. 493-546

122 Pemphigus of Conjunctiva; Report of Two Cases. E. Stieren, Pittsburgh.
123 Late Infection Following Corneascleral Trephining. J. F. Crouch and C. A. Clapp, Baltimore.
124 Treatment of Trachoma. F. Allport, Chicago.
125 Spontaneous Reattachment of Retina after Twenty-Two Years' Duration; Report of Case. A. E. Davis, New York.
126 Eye Protection for Grinders and Machinists. H. W. Davie.
127 Some Unusual Features in Case of Senile Cataract Extraction. G. H. Burnham, Toronto, Canada.
128 Case of Epibulbar Sarcoma. H. F. Hansell, Philadelphia.

Pennsylvania Medical Journal, Athens

September, XVIII, No. 12, pp. 913-978

129 Myocardial Insufficiency. U. G. Gifford, Avondale.
130 Infections of Hand and Their Management. S. J. Waterworth, Clearfield.
131 Medical Man's Work in Field of Safety. C. A. Haines, Sayre.
132 Gallstones; Report of Case. A. L. Parks, Rome.
133 *Case of Spina Bifida. O. H. Rockwell, Monroeton.
134 Functions of Health Bureau. C. P. Henry, Reading.
135 Ocular Symptoms of Parasyphilitic Affections, Paresis and Tabes. C. W. LeFever, Philadelphia.
136 Relief of Indigestion by Surgical Treatment. S. McClary, Philadelphia.
137 Case of Continued Fever of Undetermined Nature. B. F. Stahl and N. B. Gwyn, Philadelphia.

133. **Case of Spina Bifida.**—After a somewhat prolonged and difficult labor Rockwell's patient gave birth to a female child deformed as follows: The child's body was normal above the pelvis; the pelvis, however, was double with three legs, the middle and smallest leg being somewhat deformed. There was a single opening behind, anal, in the right pelvis; there were two openings in front, one in each pelvis, the one in the right pelvis being a vaginal opening with urethra communicating with the bladder, which was single; the other opening in the left pelvis, at first taken for the second vaginal opening, proved to be a second anal opening, although without sphincter muscle. There were fecal discharges from both openings, not always simultaneous, but continuing during her life. Between the middle and left leg at lower end of sacrum was a large fluctuating tumor, spina bifida, covered with integument, tense and almost transparent. The child lived and grew, though never strong, and never walking, but mentally a bright and attractive child, until nearly 10 years old when after a few days of extreme suffering due to pressure, the tumor ruptured, discharging large quantities of bloody serum; death followed in about seventy-two hours after the rupture.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

September 18, II, No. 2855, pp. 425-460

1 *Treatment of Cholera by Hypertonic Saline Solutions. G. D. Whyte.
2 Administrative Control of Measles. R. M. F. Picken.
3 Universal Suspension Apparatus for Arm and Leg. M. Sinclair.
4 *Obliteration of Cavity in Tibia Remaining after Sequestrotomy. W. Gemmill.
5 Treatment of Septic Wounds by Electrolytic Bath. F. Fowler.
6 Case of Hysterical Amblyopia. K. Campbell.

1. **Cholera Treated by Hypertonic Saline Solution.**—In the course of the Swatow epidemic reported on by Whyte, 212 patients were treated with intravenous saline injections; 154 recovered, that is, 72 per cent. It was on these lines that the Swatow epidemic was treated and the results varied according to the age, sex and habits of the patients. The main causes of the fifty-eight deaths were collapse, hyperpyrexia, uremia and asthenia. Collapse accounted for death in 6 per cent. of the patients treated. Hyperpyrexia accounted for death in 11.5 per cent. of the patients treated. Seven patients died from uremia; that is, 3 per cent. of those treated.

4. **Obliteration of Cavity in Tibia.**—The operation described by Gemmill is after the osteoplastic method recommended by Schulten.

Journal of Pathology and Bacteriology, London

July, XX, No. 1, pp. 1-84

7 *Experimental Study of Metastasis. M. Takahashi.
8 Infective Abortion in Guinea-Pigs. J. H. Teacher and J. A. G. Burton.
9 *Occurrence of Pleomorphism and Mutation among Members of Hemorrhagic Septicemia Group of Organisms. J. P. McGowan and C. Y. Wang.
10 *Absorption of Iron from Organs after Hemolysis. R. Muir and J. S. Dunn.
11 Grouse Disease. J. P. McGowan.
12 *Pathology of Obstructive Edema of Lung, Based on Observations with Starling Heart-Lung Preparation. Y. Matsuoka.
13 Sarcoma Immunity in Mice. M. Tsurumi.

7. **Experimental Study of Metastasis.**—The studies with which Takahashi's paper deals were carried out by intravenous injection of tumor emulsions into the tail vein of mice. Fourteen different tumor strains were used; three sarcomas and eleven carcinomas. Of the three sarcoma strains studied, one failed to grow in the single short series inoculated, and the other two gave 33 and 88 per cent. of success, respectively. The eleven carcinoma strains varied between 0 per cent. and 78 per cent. success. The more differentiated carcinomas, papilliferous cystic adenocarcinomas and squamous-cell carcinoma, however, all failed to grow in the lungs. Seven alveolar carcinomas were not uniformly successful, five strains giving from 16 to 78 per cent., two strains 5 per cent. and 0 per cent., respectively. The solid alveolar tumors, therefore, appear to be more capable of intravascular growth than the more differentiated adenocarcinomas and the cancroid. As a general result it is concluded by Takahashi that the tumors of rapid growth grow better and in a higher percentage in the lung capillaries than the strains which grow slowly. Among the tumor strains used for these experiments some had produced metastasis after subcutaneous inoculation, while others had produced none through many (fifty to sixty) generations. On the other hand, the strains which did not metastasize to the lungs naturally, failed to grow on intravenous inoculation with a single exception. The percentage of successful intravenous inoculations is, however, not high in this strain. The conclusion seems justified that the absence of metastases after subcutaneous inoculation of many mouse tumors, is due to the inability of the tumor cells to survive after arrest in the lung capillaries and to establish organic union with the vessel wall.

9. **Hemorrhagic Septicemia Group of Organisms.**—McGowan and Wang show how an organism of the hemorrhagic septicemia group, by an increase of virulence through pas-

sage, has also concurrently been endowed with an increased biologic activity on artificial mediums, whereby it grows much faster on these mediums and produces acid and gas fermentation in some carbohydrate mediums in cases in which it only produced acid or no change previously. It would seem to be essential for the success of this passage that the organism be taken directly from one animal to another without intervening growth on artificial mediums. Retrogression of these newly acquired biologic activities would appear to be slow. The serum obtained by immunizing rabbits with the original and virulent strains, respectively, while agglutinating their own strains well, do not, or only slightly, cross-agglutinate. The immunity to a subsequent injection, both of the virulent and of the original strain appeared to be much greater after the preparatory injection of the virulent strain than after a similar injection of the original strain.

10. **Absorption of Iron After Hemolysis.**—Muir and Dunn found that after acute hemolytic anemia in rabbits the excess of iron which has been stored in the organs, has been nearly all absorbed by the time of complete regeneration of the blood, and has been presumably utilized for purposes of blood formation. The absorption is most complete from the liver cells; it is less complete, a certain excess still remaining, in the endothelium of the liver capillaries, in the pulp of the spleen and especially in the cortex of the kidneys.

12. **Experimental Edema of Lungs.**—Matsuoka carried out a systematic study of the experimental production of obstructive edema of the lungs in isolated heart and lungs of dogs. His investigations were made with the aid of the Starling heart-lung preparation in which the part played by the heart in the production of obstructive edema of the lungs can be well studied. He also investigated the influence of the extirpation of the pericardium and of changes in the temperature of the blood on the production of obstructive edema, and studied the gaseous metabolism and energy of the heart in this condition. Obstructive edema of the lungs takes place when certain limits of combined arterial pressure and venous inflow are exceeded. (*a*) Obstructive edema is produced with a constant moderate arterial pressure of 80 mm. of mercury, when a total output of heart of not less than 92 liters per hour is maintained for over fifteen minutes. Obstructive edema of the lung is produced with a constant high arterial pressure of 160 mm. of mercury when a total heart output of not less than 38 liters per hour is maintained for over fifteen minutes. In cases of arterial pressure between 80 and 160 mm. of mercury, the limits of the output of the heart may be taken as lying about the average of the two extreme cases. All the above-mentioned maximum and minimum volumes refer to dogs' hearts which have an average weight of 42 gm.

The above mentioned limits may be raised still higher in cases in which a high arterial pressure of abundant venous inflow continues for a shorter period than fifteen minutes. How far the foregoing lower limits must be exceeded so as to produce obstructive edema in dogs with hearts of a specified size depends on the age of the dogs, on various bodily conditions, on the circumstances of operation, and on the duration of the experiment. The production of obstructive edema is considerably facilitated by the occlusion of the root of the aorta, when a relatively small amount of venous inflow is sufficient to produce the lung condition. In the production of obstructive edema, the output of the heart may be diminished to a minimum, and the blood content of the heart and the pressures in the pulmonary artery, the inferior vena cava, and the right auricle may be increased to a maximum, all quite independently of the height of the arterial pressure and of the amount of venous inflow. As the dilatation of the heart after extirpation of the pericardium easily assumes a pathologic degree, edema of the lung usually occurs more quickly and with a smaller amount of arterial pressure and of venous inflow than when the pericardium has not been removed. Gaseous metabolism and energy consumption of the heart are decreased in obstructive edema of the lung. In all cases in which the experiments with the Starling heart-lung preparation were carried out to a conclusion, the following pathologic conditions were seen in the lung; increase in volume following on diffuse congestive edema unrecognizable macroscopically, atelectasis and compensatory emphysema, and splenization of the lower lobes.

Lancet, London

September 18, II, No. 4803, pp. 635-684

14 Combining Medical with Military and Military with Medical Education and Mingling Music with Both. H. Morris.
15 *Bacteriology of Septic Wounds. A. Fleming.
16 Rhinophyma; Its Etiology, Pathology and Treatment. W. Milligan.
17 Galyl, Substitute for Salvarsan and Neosalvarsan. A. Foerster.
18 Case of Temporary Motor Aphasia Developing in Course of Tuberculosis. J. B. McDougall.
19 Salvarsan in Treatment of Yaws. W. M. McDonald.
20 One Hundred Consecutive Operations for Appendicitis. R. M. Glover.
21 Rupture of Ventral Hernia in Adult Woman with Extroversion of Bladder. H. B. Tawse.
22 Case of Supernumerary Toes. C. G. Havell.
23 Gallstone Complicating Appendicitis. F. Deane.

15. **Bacteriology of Septic Wounds.**—The organisms which Fleming has found in these wounds divide themselves into three groups: (1) spore-bearing microbes of fecal origin; (2) nonsporing microbes of fecal origin; and (3) pyogenic cocci. The first group includes *B. tetani*, *B. aerogenes capsulatus* of Welch, and certain putrefactive organisms which Fleming refers to as bacillus X and bacillus Y. The habitat of all these is the intestine of man and animals, or in soil which has been manured with animal excrement. The nonspore-bearing organisms of fecal origin include the streptococcus, *B. proteus*, *B. coli* group, and "wisp" bacillus. The streptococcus is the most important member of this group as regards infection of wounds. It is present in almost every wound up to a late stage. From its appearance in the wound early, and in association with organisms which are of known fecal origin, Fleming assumes that the streptococcal infection is also a fecal one. The third group of pyogenic organisms comprises especially the streptococcus and staphylococcus. *Staphylococcus aureus* is almost the only organism frequently occurring in wounds which is not common in animal feces. It is noteworthy that *Staphylococcus aureus* is seen in wounds only in the later stages, and as they are present on the patient's skin, it seems likely that their appearance in the wound is largely due to an invasion from the skin around.

The bacillus X is a straight bacillus 5 microns long and 1 to 1½ microns broad, nonmotile, gram-positive, and sporing freely in all mediums. In agar or glucose agar stab cultures there is much gas production. Coagulated egg medium is liquefied. Milk is not clotted, but in three or four days it is peptonized. One cubic centimeter of a vigorous milk culture injected subcutaneously into a guinea-pig produced much local edema which persisted for three days and then disappeared. The same quantity of a broth culture had no effect. Bacillus Y is a long, slender, gram-negative bacillus, feebly motile, which shows close to or at one extremity an elongated spore. It was not so commonly found as bacillus X. It forms less gas in agar or glucose agar, and the liquefaction of albuminous material such as egg proceeds more slowly. The smell of all cultures is excessively putrid. This bacillus was not pathogenic for guinea-pigs. The "wisp" bacillus is a small, slender, gram-positive nonmotile bacillus, which is of common occurrence in wounds, especially in the later stages. It arranges itself into V shapes or is aggregated into small bundles, something after the fashion of the diphtheroid group. It is an obligate anaerobe. In pus this organism is usually to be seen inside the leukocytes, and it would appear to possess a pyogenic character, as it is usually to be seen in large numbers in wounds which are producing large quantities of pus, but which differ in no other respect from similar wounds from which the purulent exudate is much less.

Annales de Gynécologie et d'Obstétrique, Paris

July-August, XLI, Nos. 7-8, pp. 545-608.

24 *Ventrofixation of the Uterus. (Suites physiologiques et pathologiques de l'hystéropexie abdominale directe.) M. Muret.

25 Microscopic Study of Sclerocystic Ovaries, and Operative Conclusions. (La résection partielle des ovaires reconnus macroscopiquement scléreux ou scléro-kystiques, est-elle justifiée au point de vue microscopique?) J. P. de Figueiredo. To be continued.
26 Questions of Priority in the History of Medicine. (La réaction contre la culture allemande en Italie.) L. R. Sanguineti.

24. **Ventrofixation of the Uterus.**—Muret insists that ventrofixation of the uterus is not enough to ensure the complete cure of prolapse of genital organs unless the perineum and pelvic floor are made a good support besides. In two cases he found that the intestines had been gradually forced down into the pouch of Douglas, forming an actual posterior vaginal enterocele. The uterus in both had been fastened to the abdominal wall, but the pelvic floor had not been strengthened. He has found in the literature sixteen cases of ileus following ventrofixation by various technics. Such mishaps are avoided by fastening a large area of the uterus fundus high up on the abdominal wall, when the patient is elderly. With young women he leaves the fundus untouched, and fastens the lower part low down on the abdominal wall, suturing merely a narrow and superficial strip of the uterus wall. This results in the formation of a median ligament uniting the anterior wall of the uterus, just below the starting point of the round ligaments, to the abdominal wall above the pubic symphysis. If the ligament lengthens, the uterus returns to its normal position; if the ligament keeps short, the uterus is held a little higher than usual but there is no interference with pregnancy later. In 250 ventrofixations which he has done he has never known of complications on the part of the intestine later.

Bulletin de l'Académie de Médecine, Paris

September 7, LXXIV, No. 36, pp. 243-274

27 Localization of Projectiles. O. Laurent.
28 *Therapeutic Enhancing of Phagocytosis. (Action cytophylactique du chlorure de magnésium.) P. Delbet and Karajanopoulo.
29 *Importance of Epinephrin in Treatment of Wounded Soldiers. (Importance de la notion d'insuffisance surrénale et du rôle de l'opothérapie surrénale en médecine et en chirurgie d'armée) E. Sergent.
30 *Inflammability of Gas in Gas Gangrene. (2 cas de gangrène gazeuse du cou. Procédé de diagnostic différentiel avec l'emphysème souscutané.) Guéniot.

28. **Therapeutic Enhancing of Phagocytosis**—Delbet's experiments on dogs and in vitro have been confirmed by a few clinical experiences, all demonstrating, he declares, the remarkable "cytophylactic power" of a 12.1:1,000 solution of anhydrous magnesium chlorid. Before an intravenous injection into a dog of 150 c.c. of this solution, 245 microbes were found incorporated in 500 polynuclear leukocytes. After this injection, 681 were found incorporated among 500 polynuclears. In other tests the numbers phagocyted were respectively 71 and 308; 387 and 872. The effect seems more pronounced the more nearly normal the leukocytes. The solution does not seem to be toxic; no untoward by-effects were noticed in animals after injections into the cellular tissue, peritoneum or veins. In man he has never injected it into a vein, but has found it useful for dressing wounds and in subcutaneous injections. In one case of a suppurating wound after crushing of the knee, he was contemplating amputation but the phagocytosis under the magnesium chlorid improved conditions so that the limb was saved.

29. **Epinephrin for the Wounded.**—Sergent has been preach- since 1898 the importance of a deficit in suprarenal func- g as a factor in various syndromes. His experi- t a base hospital has confirmed the frequency of acute ance in one or both suprarenals from toxic-infectious es or hemorrhage. Also of sudden aggravation of usly latent debility of the suprarenals. Under ordi- ditions they are able to accomplish their task, but den stress they break down. Both conditions are almost daily in wounded and sick soldiers from Collapse was particularly frequent in typhoid rs who had been under special physical stress. ese cases large subcutaneous doses of supra- ded the men past this dangerous phase. Sim- have been noted in typhus, according to the account of a French medical officer returned from captivity in Germany. In several cases Sergent witnessed the subsidence of the algid phase in choleriform diarrhea under the influence of injections of suprarenal extract. Naamé of Tunis has reported success in cholera beyond all expectations, from the use of epinephrin as an adjuvant to serotherapy. Two of Sergent's patients had been brought in completely collapsed; the asthenia was absolute. One had long presented symptoms of abortive Addison's disease; the other had recurring attacks of asthenia following typhoid years before. Both presented the typical "suprarenal white line," hypotension, hypothermia and tendency to collapse, but both rallied promptly under suprarenal treatment.

The wounded are in such a state of shock, as a rule, that the extra shock of general anesthesia is liable to extinguish the flickering flame of life, unless the surgeon appreciates the important aid to be obtained from epinephrin. Sergent urges that the ambulances, the first aid stations and the trains carrying the wounded should be supplied with suprarenal extract to use in preventing or combating suprarenal insufficiency. Even if the patient's suprarenals are working properly, this treatment is a most excellent tonic for the cardiovascular system. In the collapse of typhoid he warns that the amount must be at least 2 mg. of the 1:1,000 solution, fractioned into four doses, and supplemented by 1 or 2 mg. given by the mouth. This combines rapid and intense absorption with slow and continuous absorption. He is convinced that many of his patients owe their lives to this technic.

30. **Inflammability of Gas in Gas Gangrene.**—Guéniot has found this a useful aid in differentiating gas gangrene from subcutaneous emphysema. On contact with the actual cautery there was a tiny spurt of flame; it was never enough to burn the tissues.

Lyon Chirurgical, Lyons

September, XII, No. 3, pp. 229-396

31 *Abdominal Surgery in Field Ambulance. X. Delore, G. Cotte and A. Latarjet.
32 *Apparatus for Immobilization and Extension, Permitting Changes of Dressings, for Compound Fracture of the Femur.* G. Gayet and A. Théron.
33 Immediate Symptoms of Penetrating Wounds of the Chest. (Plaies pénétrantes de poitrine.) L. Desgouttes and E. Bressot.
34 *Importance of Lumbar Puncture in Cases of Nervous Shock and Wounds of the Skull in War. J. Baumel.
35 *Scalp Wounds and Contusion of the Brain. I, II, III. (Des petites plaies du crâne par éclats d'obus et de bombes sans pénétration du projectile, et des lésions nerveuses qui les accompagnent.) R. Leriche; (Des lesions cérébrales et médullaires produites par l'explosion à faible distance des obus de gros calibre.) R. Leriche.
36 Necessity for Double Trephining When Projectile Has Traversed the Skull. R. Leriche.
37 Trephining for Shell Wounds of the Skull. (Notes sur les suites opératoires de 33 trépanations pour plaies du crâne par éclat d'obus.) A. Gourliau.

31. **Abdominal Wounds in War.**—These three surgeons attached to field ambulances are all in favor of immediate operations for gunshot or shell wounds of the abdomen.

34. **Lumbar Puncture after Wounds of the Skull or Concussion.**—Baumel has found that lumbar puncture gave important information as to the extent and severity of the injury; it had also a marked beneficial influence as the spinal fluid was always under high pressure, even when there had been merely concussion without direct contact with the skull. The detailed findings in fifty-six cases are tabulated. The wound was the work of a fragment of shell in nearly all the cases. The polynuclears increase during an infectious process so that polynucleosis after injury of the skull renders the prognosis graver. In the cases with lymphocytosis alone, the meningitis, of which it is the index, can be only subacute. With simple commotion of the nervous system, lumbar puncture is the only rational treatment, as also with nonpenetrating wounds of the skull. It reduces also the disturbances from hypertension in cases of severe injury of the skull, while it gets rid of toxins and hastens the return of normal conditions. It should be done systematically, day after day, and seems to be absolutely harmless unless the pressure in the fluid is below normal to start with.

35. **Wounds of the Skull and Contusion of the Brain.**—Leriche devotes sixty-six pages to this study of wounds of the skull and the nerve lesions which accompany them. He has seen 397 cases in which the scrap of shell had apparently merely bruised the scalp. He always made an exploratory incision and trephined if the bone looked in any way abnormal, and seventy-eight in this group were traced to recovery or death. No matter how apparently insignificant the lesion, every wound of the scalp by a projectile should be incised and the bone examined, but the dura should never be incised if it is found intact, no matter how extensive the subjacent hematoma, contusion of the brain and immobility of the dura. High tension in the fluid at lumbar puncture is no criterion as to deep-seated lesions; high tension and an abnormal tint of the fluid reveal the existence of small foci of contusion of the brain which are not so much the work of the projectile as of the air concussion from the explosion of the shell. He found lumbar puncture a valuable aid in treatment. The details of eighty-seven cases are given, as also of eleven in which there was no direct wound but severe contusion of the brain or spinal cord from explosion of a shell or mine. The fluid keeps under high pressure for days and the patients exhibit paralytic phenomena or melancholia with stupor or jacksonian epilepsy. Edema of the brain and small hemorrhagic foci were found on trephining and lumbar puncture gave great relief as a rule.

Berliner klinische Wochenschrift

August 30, LII, No. 35, pp. 909-932

38 Action of Atropin and Scopolamin on Cats' Eyes. G. Joachimoglu.
39 Diagnosis and Treatment of Wounds of the Lungs. (Lungenschüsse.) S. Korach.
40 Lumbar Puncture for Submeningeal Hemorrhage of Traumatic Origin. T. v. Podmaniczky.
41 Nontoxic Dysentery Bacilli. (Ruhrbacillen des giftarmen Typus.) G. Arnheim.
42 *Tetanus. B. O. Pribram. Commenced in No. 33.

September 6, No. 36, pp. 933-960

43 Picking up the Wounded on the Field. (Verbesserung der Verwundetenfürsorge in der Front.) Köbisch.
44 Influences of Diseases, Especially Tuberculosis, on Growth and State of Nourishment of Schoolchildren. (Einfluss von Krankheiten auf das Wachstum und den Ernahrungszustand der Schulkinder.) Thiele.

42. **Tetanus.**—Pribram regards the localization of the spasms as of great importance for the prognosis; it is naturally graver when the muscles of the diaphragm and glottis are involved, even when all the other muscles are spared. Pain in the epigastrium is an early sign of involvement of the diaphragm. He accepts the duration of the incubation as dating from the moment of toxin production, not from the moment of the injury. Three signs differentiate tetanus from tetany: the lack of the facialis phenomenon, of the contraction of the hand, and of the isolated adductor spasms. The frequency of pneumonia in tetanus suggests that it is a specific complication. He was impressed with the fact that in a remarkably large proportion of his tetanus patients, and in nearly all of those that succumbed, signs of the status lymphaticus were manifest.

The best treatment of the wound consists in radical excision of all necrotic tissue down into fresh bleeding tissue. Anything inducing a scab favors development of tetanus. In one case no portal of entry for the tetanus bacilli could be found except peeling between the toes from sweat. The usual measures have no effect on the diaphragm-glottis spasms. All we can do is to hold back normal breathing and supplement it at need with artificial respiration; we can realize this by severing the phrenic nerve on each side, with or without tracheotomy, by injecting magnesium sulphate with the shoulders lowered, or by gradually limiting the normal breathing by large doses of morphin. The morphin has to be given in increasing doses up to 0.3 gm. per day; ordinary doses have no effect. Symptomatic treatment aims to ward off spasms, and this is imperative with diaphragm-glottis spasms as any one is liable to prove fatal. When all is in readiness for artificial respiration, these large doses of morphin need cause no apprehension, he says.

Deutsche medizinische Wochenschrift, Berlin

September 9, XLI, No. 37, pp. 1085-1116

45 *Care Early in Typhoid. (Bedeutung der ersten Krankheitstage für den Verlauf des Bauchtyphus.) A. v. Koranyi.
46 Septic Meningococcus Infection; Four Cases. A. Bittorf.
47 Comparison of Roentgen-Ray and Clinical Stomach Findings. W. Jaworski.
48 Magnesium Glycerophosphate Proves More Toxic than the Sulphate in Experimental Tests. (Ueber die subkutane Methode der Narkose durch Magnesiumsalze: Sulfat und Glycerophosphat.) R. Kobert.
49 Hypophysis Extract Checks Diuresis. (Ueber die Beeinflussung der Diurese durch Hypophysenextrakte.) A. v. Konschegg and E. Schuster.
50 Irregular Pulse from Military Standpoint. (Der unregelmässige Puls.) P. Reckzeh.
51 Kaolin Plus Opium, by Rectal Injection, Proves Effectual in Dysentery. (Behandlung von Ruhr und ruhrähnlichen Darmkatarrhen.) du Mont.
52 Air Concussion from Infantry Projectiles not Serious. (Luftdruck bei Infanteriegeschossen.) M. Reuter.

45. **Management of Typhoid in First Few Days.**—Koranyi has been studying the influence on the course of typhoid, in his 523 cases, of the care of the patients during the first few days. The mortality increased from 5.6 per cent. among those patients received at the hospital from the first to the fourth day of the disease, to 10.1 per cent. after the seventh day.

Jahrbuch für Kinderheilkunde, Berlin

September, LXXXII, No. 3, pp. 175-260

53 *Albumin Milk. (2½ jährige Erfahrungen mit Eiweissmilch.) V. Poulsen.
54 *Congenital Ichthyosis. O. Bossert.
55 *Etiology of Scarlet Fever. F. Schleissner.
56 *Relations between Otitis Media and the Various Diseases of Infants. (Beziehung der Mittelohrentzündung zu den Krankheiten des Säuglingsalters.) F. Scherer and O. Kutvirt. Commenced in No. 2.

53. **Albumin Milk.**—Poulsen makes the albumin milk a little different from Finkelstein's formula, using 9 parts casein to 8 parts carbohydrate instead of Finkelstein's 2 to 1. It also contains a larger proportion of whey, namely, ⅕ liter whey plus the whey from ½ liter buttermilk, thus ensuring a larger amount of salts. One liter represents 560 calories instead of Finkelstein's 420. Poulsen has found this albumin milk most effectual in chronic diarrhea in infants over a year old, but he summarizes in detail his experiences with 124 infants fed on this albumin milk and their development followed during the months and years since. He emphasizes the importance of constant vigorous stirring while boiling up. He passes the freshly clotted casein from 1 liter of full milk through a hair sieve at least ten times, after mixing it into ½ liter water and ½ liter buttermilk. The cane sugar is then added, dissolved in as little water as possible, and the whole is boiled up and passed through a hair sieve until it is nearly cold. Then it is chilled further in water and the bottles are filled and placed on ice.

54. **Congenital Ichthyosis.** — Bossert says that only one original case of this affection has been published in German pediatric literature, and he gives here an illustrated description of a typical case encountered at Breslau. The skin was hard as leather and had cracked at numerous points. This horny shell over almost the entire body prevented suckling and the normal play of the vital processes, and the infant lived only four days. It was the first child of healthy and well-to-do parents, and seems to be about the sixtieth case on record.

55. **Etiology of Scarlet Fever.**—Schleissner succeeded in twelve of twenty-seven attempts in inducing in monkeys a disease apparently identical with scarlet fever. He insufflated into the mouth and nose twenty-four hour bouillon cultures of streptococci from scarlet fever cases. The disease could be also transferred to healthy animals by smearing with secretions from the throats of those affected. It proved impossible to reinfect those in the latter group, indicating that immunity had been realized. Likewise all attempts failed at inoculation with filtrates of the bouillon cultures.

56. **Otitis Media in Infants.**—Scherer and Kutvirt here conclude their study of the relations between otitis media and the various diseases of infancy. They found otitis media in 18.6 per cent. of the cases of nutritional disturbances, and in from 6.6 to 25 per cent. of the affections of the air passages, the proportion being larger the closer to the eustachian tube. The vomiting with digestive disturbances, the *sneezing with rhinitis*, and the coughing with bronchitis and pneumonia explain the frequent involvement of the middle ear. Fully 22.3 per cent. of the infants with inherited syphilis had otitis media, and 30.4 per cent. of the tuberculous infants. In these two groups the ear trouble developed insidiously. In every case of parotitis there was also otitis media. The latter seems to be only exceptionally a primary affection. Otitis media is always a grave affection for infants, depressing the vitality, and it may even prove fatal. But proper treatment, as for adults, applied early is generally followed by prompt recovery, although a tendency to recurrence may be apparent into late childhood.

They call special attention to their three cases of convulsions (eclampsia) in all of which there was a suppurative otitis media. Paracentesis was followed by prompt subsidence of the convulsions and striking improvement in the general condition. The circumstances in these cases render the assumption plausible that both the convulsions and the otitis media were manifestations of intestinal infection and intoxication.

Medizinische Klinik, Berlin

August 29, XI, No. 35, pp. 959-986

57 Modest but Certain Food Value of Blood from the Slaughter-Houses. (Blut als Nahrungsmittel.) F. Blum.
58 Reciprocal Relations between the Consciousness, and the Innervation of the Vascular System. (Die wechselseitigen Beziehungen zwischen den Vorgängen des Bewusstseins und der Innervation des Gefässsystems.) H. Bickel.
59 Disturbances Following Grenade Explosions. (Ueber Granatexplosionsstörungen.) L. Mann.
60 *Vaccination against Typhoid and Diagnosis of Typhoid in the Vaccinated. (Typhusschutzimpfung und Typhusdiagnose bei Geimpften.) C. E. C. Bronner.
61 The Exhibitionist. (Zur Kenntnis des Exhibitionismus.) G. Flatau.
62 Stereoscopic Localization of Projectile in Tissues. (Bestimmung der Geschosslage mittels der Stereoskopie.) Drüner.

September 5, No. 36, pp. 987-1014

63 Pneumonia. H. Hochhaus.
64 *Injurious Action on Central Nervous System of General Anesthesia and Means to Prevent It. E. Weber.
65 Photodynamic Action of Eosin Not Dangerous. (Zur Physiologie und Toxikologie des Eosins.) E. Rost.
66 *Importance of Fat Embolism in Military Surgery. L. Bürger.
67 Aleukemic Myelosis. F. Weinberg.
68 "Patella in the Elbow." (Ellbogenscheibe.) L. Katz.
69 *Mintz' Meat Extract Test Breakfast. (Das Mintzsche Bouillonprobefrühstuck.) E. Rosenhain.

60. **Typhoid in the Inoculated.**—Bronner has been studying in particular the agglutination titer after inoculation. He tested for it in 104 cases with intervals of from one to seven months since the inoculation. He was surprised to find that the eighty-fifth day seemed to be the dividing line. Up to that day all responded positively to the agglutination test, but after the eighty-fifth day 47.2 per cent. gave no agglutination response. The intervals between the inoculations did not seem to influence the agglutination titer. This test cannot be accepted as a criterion for the diagnosis of typhoid with a titer above 1:200, and only in about 89 per cent. of the cases can it be utilized for the diagnosis. An increasing titer, regardless of the actual figures, strongly suggests typhoid if a month at least has elapsed since the inoculation. The course of typhoid is modified by the inoculations, but it still retains its typical character. The blood picture and urine findings are apparently not influenced if the interval since the inoculation is longer than two weeks. It is a little more difficult to cultivate the bacilli from the blood, and serologic tests cannot be depended on in fully one fifth of all cases after three months.

64. **Means to Prevent Injurious Action of Anesthetics on the Central Nervous System.**—Weber has been making a special study for years of the central mechanism for the innervation of the blood vessels, and the war has afforded him unprecedented opportunities for this research. Some of his conclusions were summarized in these columns June 5, 1915, p. 1949, as he applied in treatment of concussion of the brain some of the facts learned in his experimental work. The vessels shrink, instead of the normal dilatation, during mild muscular effort when the central mechanism for the innervation of the vessels is deranged. The standard test is by dorsal and plantar flexion of the foot, hanging free; in health this gentle exercise induces dilatation of the vessels elsewhere in the body (except in the brain). After local anesthesia there are evidences of perverted vasomotor functioning, lasting for one or two days, and in about half the cases there is disturbance in the vascular reaction. With chloroform general anesthesia, the same occurs but much more pronounced, the disturbances lasting from five to six days and the morbid vascular reaction occurring in every case and being still manifest from one to six weeks afterward.

He theorizes to explain these phenomena, commenting on the extreme sensitiveness of the central vasomotor mechanism to injurious influences brought by the blood. He also comments on the prompt way in which this mechanism seems to be steadied and brought back to normal under the influence of stimulation from alternating hot and cold douches. This report is based on fifty cases studied from this point of view and known to have had normal conditions before the anesthetic was applied. Tracings from two cases are given; in one the tests showed abnormal conditions persisting four weeks after the chloroform. The alternating hot and cold douches were then applied (as described in the abstract referred to above). and by the fourth douche all the symptoms had disappeared, including the muscular weakness, exhaustion on climbing stairs, profuse sweating on slight exertion, and headache—all part of the syndrome resulting from derangement of the central mechanism for innervation of the vessels. Ether seemed to exert an injurious influence to a degree about midway between that of local anesthesia and chloroform.

66. **Fat Embolism in Military Surgery.**—Bürger remarks that the clinical diagnosis of fat embolism in the lungs or in the organs of the greater circulation was never made during life in the cases in his experience. But the clinical picture as he describes it seems to be characteristic. Prophylaxis is extremely important in managing the wounded in war. The Esmarch bandage should be applied the same as for hemorrhage to ward off fat embolism in all cases of multiple fractures or single fracture in the severely wounded, especially the elderly and those weakened by disease or alcohol, those that have been run over by a vehicle or thrown from a horse or hurled by an explosion. Immediate application of the Esmarch bandage will not only prevent further destruction of fat tissue by the blood, but will prevent that already broken up from being transported elsewhere. Even Momburg constriction at the waist line might be advisable, especially with crushing injury of the pelvis. Judging from his experimental research, already disintegrated fat may become bound by coagulating blood, and thus the danger of embolism be averted. The Momburg constricting band should not be left on too long; half an hour should be sufficient. Before removing the Esmarch bandage, venesection might drain away any loose fat particles in the blood, but Bürger thinks that this is scarcely necessary. Injection of gelatin into the limb might favor development of thrombosis.

It is extremely important, he reiterates, to leave the severely wounded where they are; any attempt to move them to a distance is liable to bring on fatal fat embolism. It may be necessary to make ample provision for draining the crushed soft tissues. When a crushed limb has to be amputated, the danger of fat embolism must be heeded more than has been the case hitherto, and, for the same reason, delirium should not be allowed to develop or should be checked.

The toxic action of chloroform is magnified when there is fat embolism. Most physicians regard fat embolism as beyond all aid, but Bürger thinks that much can be accomplished by prompt diagnosis and opening up of the focus in the bone and tamponing it. Venesection also relieves the heart combating against the fat embolism in the greater circulation, kidneys, etc. Saline infusion seems contraindicated, in his opinion, although Gaugele advocates it. Stimulation of the heart he regards as useful.

In his experience, the onward passage of the fat emboli seemed to be independent of the heart force, and to depend rather on the nature of the fat and the construction of the lung capillaries. Diversion of fluids to the intestines, as with calomel, is liable to prove useful. If symptoms of pressure on the brain develop from venous stasis or hydrocephalus, leeches to the mastoid process might divert the fluid effectually, as also revulsion in the scalp by hyperemia induced by an irritating salve. Lumbar puncture may also aid in diagnosis and as a therapeutic measure, but it must be applied with extreme caution. After recovery from fat embolism, we must expect considerable damage from the passage of the fat emboli, and time must be given for repair, longer than would be necessary with the same wounds, fractures and contusions without the embolism. We may expect to have the patient complain long of general weakness, dizziness, ready fatigue, heart disturbances, dyspnea, or depression. Lumbar puncture may relieve or cure some of these persisting symptoms, supplemented by hot foot baths, air and sun baths and revulsive measures in general, warning impressively against overexertion either mental or physical. If possible the patient should be given light work and gradually resume his ordinary occupation.

69. **The Meat Extract Test Breakfast.**—Rosenhain has been giving Mintz' test breakfast a thorough trial. (It was described recently in The Journal, Sept. 18, 1915, p. 1067.) He tabulates the findings in twenty cases with parallel test breakfasts. They testify that the Mintz technic is reliable and highly instructive, but that it belongs to hospitals and laboratories rather than to general practice. The Ewald test breakfast answers practical purposes better and gives all the information needed as a rule in general practice.

Münchener medizinische Wochenschrift, Munich

September 7, LXII, No. 36, pp. 1209-1240

70 Treatment of Diphtheria. O. Seidel.
71 Coagulation Reaction in Diagnosis of Syphilis. (Serodiagnostik der Syphilis mit chemischen Substanzen.) v. Dungern.
72 Agglutination of More than One Species of Bacteria. (Die Bildung von Nebenagglutininen.) F. Kutscher.
73 *Ingestion of Salt Checks Night Sweats and Sweating in General. (Einnahme von NaCl ein Mittel zur Verminderung der Schweissbildung bei Phthisikern und auf Märschen und zur Verhütung von Magenstörungen bei Anstrengungen und Hitze.) R. Link.
74 Emergency Obstetric Application of the Hydrostatic Bag. (Zur Technik der Hysterorysе.) K. Tietze.
75 Improved Technic for Politzerization. (Zur Technik der Politzerverfahrens.) K. Böttger.
76 Blinded Soldiers as Masseurs. R. Kuh.
77 War Injuries of the Central Nervous System and Welfare Work. (Kriegsbeschädigungen des Zentralnervensystems und soziale Fürsorge.) Rittershaus.
78 Localization of Foreign Bodies. (Zur röntgenologischen Fremdkörperlokalisation.) M. Favarger.
79 Constricting Band Renders Exanthem Manifest in Typhus. (Die künstliche Stauung als diagnostisches und differentialdiagnostisches Hilfsmittel beim Fleckfieber.) C. Dietsch.
80 Improved Technic for Splints. (Die Leerschiene.) v. Gruber.
81 Improvised Electrotherapeutic Appliances. Wunder.
82 Toxic Action of Sulphur Soap. (Intoxikationen nach *prophylaktischer* Schwefelanwendung und ihre Verhütung.) E. Hesse.
83 *Ring of Roofing Paper to Protect Superficial Lesions. (Dachpappe zur Fensterung von Verbänden.) Krug.
84 Wounds of Peripheral Nerves. (Ein offenes Wort an die Kollegen.) W. Fürnrohr.

73. **Ingestion of Salt Checks Sweating.** — Link gave a number of consumptives in his care a level teaspoonful of salt in half a glass of water, that is, about 5 gm. sodium chlorid in 150 c.c. water, on the assumption that the loss of salt in the night sweats might be responsible for the depression felt after them. To his surprise he found that the patients did not sweat as freely as under other conditions. The salt evidently checked the production of the night sweats. Since then he has given salt systematically in this way to over a hundred tuberculous patients and the effect was almost invariably good. The salt even checked sweating under sodium salicylate and during the crisis in pneumonia. The possible causes for this action of salt are discussed at length and he reports further the apparently favorable influence of ingestion of a hypertonic solution of salt preliminary to long marches to prevent excessive sweating.

83. **Ring to Protect Open Wounds.**—A broad strip of roofing paper is slit at intervals along one edge, and the strip is then rolled into a ring to fit over the lesion. The slit edge adapts itself to the surface of the skin below. A sheet of gauze is laid over the top of the ring, held in place by a second narrower ring slipped on outside. The tar paper does not absorb secretions.

Therapie der Gegenwart, Berlin

September, LVI, No. 9, pp. 321-360

85 Substitutes for Amputated Limbs. (Ueber den Ersatz amputierter Glieder.) M. Cohn.
86 *Organotherapy in War Medicine; Conception of Dyshormonism. (Anti-Thyreoidin und Hypophysin in der Kriegs-Medizin.) O. Kohnstamm.
87 Vaccineurin in Treatment of Neuritis. K. Löwenstein.
88 *Nonsurgical Treatment of Anal Fissures. F. Schilling.

86. **Dyshormonism.**—Kohnstamm relates a number of instances in which thyroid or hypophysis extract or epinephrin caused a surprising change for the better in various morbid conditions from disturbance in internal secretions, superposed on or caused by the emotional stress of the campaign or resulting from concussion of the nervous system. He regards neurasthenia in soldiers as having a somatic basis in molecular disturbances or changes in the nerve tissue like those which distinguish magnetic from nonmagnetic iron. In several cases some of the symptoms of exophthalmic goiter had developed in soldiers and officers on active service, but it subsided under antithyroid treatment. A typical asthma or bronchitis was materially benefited in many instances by a combination of hypophysis and suprarenal extracts. In one case of exophthalmic goiter in a soldier, tachycardia changed to bradycardia as jaundice developed and then returned again as the jaundice subsided. Hypophysis extract seemed to combat insomnia effectually and also proved useful in a case of periodically recurring functional angina pectoris of vasomotor origin. As the attacks returned regularly ten days before the menstrual period he assumed that ovarian functioning was responsible for them, and hence aimed to give the antagonistic hormone in hypophysis treatment. Its action on the heart is the more striking as it contracts the coronary vessels instead of dilating them like epinephrin.

88. **Anal Fissures.**—Schilling relates that only nineteen were females in his forty-six cases of anal fissure. In bottle infants with lime-soap stools, the resulting fissures usually heal under addition of carbohydrates to the food. Superficial fissures heal under a protecting salve containing a little anesthetic. Others may heal under Peruvian balsam or ichthyol. He disapproves of caustic applications, and combats the spasms and constipation by injecting a local anesthetic into the muscle below the tear. Glycerin suppositories are irritating; he prefers a pint of soapy water or soda-oil introduced through a soft tube with a number of openings. Twice or once a day he injects into the rectum some astringent, 150 c.c. of a weak solution of tannin or 1 c.c. tincture of krameria in 200 c.c. warm water, or 0.25 per cent. solution of copper or zinc, the patient lying on his left side and straining to expel all the fluid. This exercise in straining while reclining helps to relax the sphincter. Later he applies a little balsam or ichthyol. There must be no straining at stool, as this congests hemorrhoidal nodules. The accompanying nervousness must be combated likewise. With patience and perseverance the fissures gradually heal over under this treatment, as a rule, the tear filling up with scar tissue.

Policlinico, Rome

September 12, XXII, No. 37, pp. 1229-1260

89 Favorable Impressions of Serotherapy in Measles; Eight Cases. (La cura del morbillo col siero de morbillosi convalescenti.) U. Majoli.

September 19, No. 38, pp. 1261-1296

90 Present Status of Malaria. (Le moderne conquiste della clinica della malaria.) V. Ascoli.

September 15, Surgical Section No. 9, pp. 413-460

91 Case of Hernia of Diverticulum of Meckel. (*Contributo alla casistica delle ernie diverticolari e del "Littre."*) C. Scandola.
92 Improved Technic for Ventral Herniotomy. (*Semplificazione di tecnica nelle laparoplastiche per sventramenti post-laparotomici con applicazione alla cura radicale delle ernie ventrali.*) G. Trotta.
93 Mixed Tumors of the Palate. G. Morone. Continued.

Riforma Medica, Naples

September 11, XXXI, No. 37, pp. 1009-1036

94 *Ataxia in Walking and in Swimming. (*L'atassia nel cammino e nel nuoto.*) A. Murri.
95 Coagulation Reaction in Diagnosis. (*Di una speciale reazione di coagulazione del siero di sangue in condizioni normali e patologiche.*) S. Seigliano.

September 18, No. 38, pp. 1037-1064

96 Immunization and Anaphylaxis in Experimental Glucosuria. A. Ferrannini.

94. **Ataxia in Walking and Swimming.**—*A. Marina of Genoa has recently published a work on posttyphoid nervous affections, in which he relates that a typhoid patient was left with acute ataxia but was able to swim perfectly, notwithstanding his inability to walk. Murri discusses the mechanism of ataxia and the functioning of the cerebrum and cerebellum involved, saying that Marina's case seems to throw light on some of the obscure points in our knowledge of ataxia.*

Russkiy Vrach, Petrograd

XIV, No. 28, pp. 649-672

97 Lobulation of the Liver, Spleen and Lungs of a Man; Resulting Cleavage and Separation into Parts, with Study of Embryology of these Organs. N. A. Batuieff. Commenced in No. 27.
98 Splenectomy for Floating Spleen; Nine Cases. V. P. Jilinskaya.
99 Unfavorable Experiences with Chemotherapy of Fibrinous Pneumonia. L. P. Dmitrenko.
100 *Foreign Body Several Years in Bronchus. V. I. Telega.

No. 29, pp. 673-696

101 *Pathologic-Anatomic Changes after Death from Asphyxiating Gases. I. T. Pojarisky.
102 Femoral Arteriovenous Aneurysm with an Osseous Sac. N. A. Bogoraz.
103 Care and Transportation of the Insane among the Troops in Active Service. N. N. Reformatsky.
104 Formation of Stone in Bladder around a Shrapnel Fragment. S. N. Lissovskaya.
105 *Neutralization of Acid Stomach and Intestinal Contents. A. M. Zaitzeff.
106 *Treatment of Poisoning with Caustic Substances. J. G. Dillon.

100. **Nut in Bronchus.**—Telega gives the history of a patient who had had a nut in the bronchi for six years. The symptoms from it were those of advanced tuberculosis. The foreign body was finally coughed up, but the patient soon died from pulmonary hemorrhage.

101. **Pathologic-Anatomic Effects of Poisonous Gases.**—Pojarisky studied the pathologic changes from asphyxiating gases in forty cases; in six cases after an interval of from twelve to thirty hours, in twenty after two or three days, and in fourteen cases from three to eleven days after the asphyxiation. The principal changes that occurred within twelve hours after asphyxiation were marked edema of the lungs and partial atelectasis, and severe changes in the blood, especially in Bizzozzero's blood plates and in the walls of the vessels, the endothelium. The red corpuscles suffer but little. Owing to these changes in the blood, substances form which increased the coagulability of the blood, rendering it thick and unable to circulate. In many cases there was formation of white adherent thrombi. The blood changes and thrombi formation render the work of the heart very difficult, and the nutrition of the tissues suffers, which leads to asphyxia and death from pulmonary edema. Miliary hemorrhages in the brain are very frequent. After three days complications may arise, such as putrid bronchitis, partial pulmonic gangrene, pleurisy, embolism, hemorrhagic infarcts, etc. These complications may lead to permanent disability even if there is recovery from the asphyxiating gases.

105. **Mechanism of Neutralizing the Acidity in Stomach and Intestine Contents.**—Zaitzeff studied the mechanism of neutralization of the acid stomach and intestine contents on five dogs with gastric, duodenal or intestinal fistulas. Altogether, twenty-eight experiments were made, of which four were done on a dog with a pyloric fistula. He found that the neutralization of the acidity in the *stomach is done* by the pancreatic juice, which is also responsible for the neutralization of the acidity in the upper portion of the small intestine. In the lower *portion this is* accomplished by the intestinal juice and mucus. The acid fluids (contents) having been neutralized, are absorbed all along the small intestine, and do not reach the end of the latter. The source of chlorin in the stomach is the pancreatic juice, as the proportion of chlorin increases in the stomach when acids not containing chlorin, such as acetic, sulphuric or lactic acid, are introduced into the stomach. The less concentrated the acids introduced into the stomach, the lower becomes its acidity. In the pyloric portion of the stomach the acidity is lower than in the fundus, because of the presence of the pyloric alkaline juice. After introduction into the stomach of acid fluids, the stomach content acquires the properties of trypsin digestion, that is, proteins are digested in an alkaline medium. This also shows that pancreatic juice gets into the stomach under such circumstances.

106. **Treatment of Poisoning from Caustic Substances.**—*Dillon obtained excellent results in the treatment of poisoning with caustic substances such as glacial acetic acid, phenol, ammonium chlorid, sulphuric acid, etc., from lavage of the stomach always preceded by a hypodermic morphin injection to relieve the shock. The esophagus must be soothed and not irritated, which he realized by giving the patient by mouth pure olive oil, 200 gm. in twenty-four hours, keeping this up for seven or eight days if necessary. This was followed later by sweet cream, raw eggs, mucilaginous substances and butter, and gradually ordinary solid food is resumed. Water can be given in the form of rectal injections of normal salt solution, 100 or 150 gm. every two hours, or by the drop method. In addition the mouth should be kept clean, rinsing the mouth with some antiseptic solution, preferably hydrogen dioxid. Of 120 patients thus treated only one died. Three others did not reach the hospital until moribund and the treatment could not be carried out.*

Hospitalstidende, Copenhagen

September 8, LVIII, No. 36, pp. 901-924

107 *Disinfection* of Sputum in the Home. (Om desinfection i Hjemmene af *Tuberkuløses Ekspektorat.*) *K. Schroeder.*

September 15, No. 37, pp. 925-948

108 Homogeneous Blending of Air in the Lungs. (*Om Lungeluftblandingers Homogenitet. Undersøgelser* i Anledning af Krogh & Lindhards Methoder til Bestemmelse af Hjærtets Minutvolumen.) C. Sonne. Commenced in No. 36.

Hygiea, Stockholm

LXXVII, No. 16, pp. 897-960

109 *Pathogenesis, *Treatment* and *Prophylaxis* of Mercurial Stomatitis. (Om kvicksilverstomatiten.) J. Almkvist.

109. **Prevention of Mercurial Stomatitis.**—*Almkvist has* published a number of works on this subject since his first report of experimental research in the *Nordiskt Mediciniskt Arkiv* in 1903. This stomatitis develops only when the blood contains mercury in a form that combines with albumin on and around the teeth to form an *irritating compound.* Prevention must be directed to keeping the cracks and crevices of the mouth clean of *albumin.* The *tooth powders* used must be of absolutely soluble material so that nothing be left to get into crevices, and all tartar must be carefully removed. Treatment should aim to sterilize all the crevices and he uses a syringe with long fine tip to force the disinfectant into the crevices. He has found hydrogen peroxid especially effectual when used freely in this way. If this is done now and then during the *course of mercurial* treatment, even the predisposed may be saved from stomatitis.

Ugeskrift for Læger, Copenhagen

September 9, LXXVII, No. 36, pp. 1429-1468

110 Quantitative Determination of Uric Acid in the Blood. (Bestemmelse af Blodets Urinsyremængde.) C. Jørgensen.
111 *Roentgen Findings* in Normal Large Intestine. *H. T. E. H.* Thaysen. Concluded.

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RELATION OF THE HOSPITAL TO THE COMMUNITY *

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To state that the modern hospital is a factor of great importance in the life of every community is to state a fact so well recognized, so oft repeated, that it seems almost an impertinence to say it again. Yet, strange as it may seem, there exist the greatest differences in standards, in fundamental principles, in organization, in scope of work, together with a great deal of ignorance on the part of the public, of physicians and of hospital administrators as to what hospital efficiency means. It might also be said that there is only one factor common to all and that is the uniform purpose of trying to make sick people well.

Consider for a moment the different methods of support for hospitals. In America we have two main types — the semipublic or endowed and the municipal or city hospital. I am speaking of general hospitals and therefore do not include the state hospitals for the insane. In this country it can be said without fear of contradiction that the best hospitals, those that have contributed most up to this time to medical education, to scientific work, and which have been managed with the greatest efficiency in the interests of the patients, have been the endowed hospitals. The municipal hospitals have been for the most part, and are still, interfered with by local politics, medical and otherwise, are insufficiently staffed, insufficiently supported and poorly managed.

In England we find a somewhat similar condition, the majority of the hospitals being supported by the subscription system. In Germany we find quite the reverse, the majority and the best hospitals there being supported by the state or the municipality and used for the broadest purpose of service, in that medical education and research are encouraged and supported everywhere.

In America we find the hospitals providing for both classes of society — the poor who cannot pay, and the more fortunate class, those who can. In England, adequate provision is made only for the poor. Sir William Osler has said that one of the greatest needs in the English hospital system is that provision should be made in the general hospitals whereby the well-to-do may receive treatment as good at least as that afforded the poor. In Germany the condition has, until comparatively recently, been somewhat the same.

We therefore see the widest differences with regard to support and scope of work, in the hospitals of three of the largest countries of the world; and these conditions typify those of practically all other countries.

What is the rational basis of support and what should be the scope of the work? Consider the condition in your own country. The state or city assumes the responsibility of providing for the insane, the defectives and those suffering from tuberculosis. The cities provide for the care of those suffering from contagious diseases and for a limited number of the poor who require treatment in a general hospital. But by far the majority of the poor must get hospital attention in those institutions which are supported by private philanthropy. It is the duty of some one to care for those too poor to provide for themselves. We have not yet accepted the principle that it is the duty of the rich to care for the poor. It would seem therefore that the duty rests with the city or state, or both. Now I am not arguing in favor of abandoning our hospitals which are supported by private funds, not at all, but I do wish to at least try to help to place the responsibility where it belongs. We are too accustomed to our present methods to make such a radical change without involving great sacrifice and great suffering, for on the part of the city and state authorities, our present methods are largely the result of lack of appreciation of the responsibility and the need. Furthermore, our system has worked well, but there is need that the responsibility be recognized and appreciated in order that the burden may not continue to be so unequally divided. That hospitals are obliged to accept state appropriations, made according to the whims of legislators, or according to the influence brought to bear, that they are obliged to accept per capita allowances from the city, which represents frequently not more than one-quarter, and rarely more than one-half the actual cost of caring for a patient, is neither in accordance with the principles of business nor equity.

The cost of hospital administration is increasing each year, and the financial burden for most hospitals is a matter of grave concern. The point which I wish to make is that, in the final analysis, the responsibility does not rest with the private philanthropist; and while it is in every way desirable to continue our system of endowed hospitals and to foster that particular kind of philanthropic spirit, it is at the same time absolutely necessary that the state and municipal authorities recognize their responsibility, recognize that these hospitals are doing a great public service, and when aid is needed, that the per capita allowance should be based on facts and at least approximate the actual cost of the service rendered.

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* Chairman's Address, read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

What should be the scope of work? By that question is meant, should hospitals provide only for the poor? It is an accepted fact that today a person who is actually ill with any serious illness requiring medical or surgical attention stands a much better chance of recovery if he receives treatment in a hospital. It is also generally conceded that, on the whole, the physician's private hospital, or the nursing home, does not supply the same advantages that can be obtained in the well-organized, thoroughly equipped general hospital. If these facts are accepted, then it follows that if a hospital is intended to serve the fullest needs of the community, it should provide, for those who can afford to pay, facilities at least as good as those furnished to the poor who cannot pay.

We have been considering the hospital in its relation to the community as an agency for the relief of suffering, and as such, whether endowed or supported by the municipality, it is a necessary factor in the preservation of health. The hospital is much more than that. It is an educational factor of great importance, both to the community in which it is located and to the country at large. Many of these hospitals are teaching institutions, furnishing the opportunity for bedside instruction and the practical experience for large numbers of students of medicine, who, when they have received their degree, go out to practice in that or some other community. Every hospital has its resident staff of physicians and surgeons, numbering all the way from one to a hundred, who serve in the hospital from one to several years. Here they perfect themselves, acquire a high degree of skill in diagnosis, treatment and surgical procedure, and in time go out to give the benefit of that skill to some community.

Furthermore, it is in the hospital wards and operating rooms that the senior members of the staff, by the study of large groups of patients, and by the experience gained in operating on large numbers of patients, acquire a skill and technic that has been such an important factor in the progress of medicine and surgery. In the laboratories, too, as a result of careful routine study, or of painstaking experimental work, new facts have been discovered, of the greatest importance in medicine and surgery, and to mankind.

The effect of this group of earnest, skilful workers in any community has a very practical value in the development of public hygiene, better sanitation, better living conditions and a higher plane of existence.

Then there is another most important group—the nurses. Every hospital of any size has its training school for nurses. In this school each year a number of young women are trained to give competent, skilful attention to those who are ill. We now recognize that good nursing is often quite as essential as good medical attention, and is just as often equally responsible for a favorable result. Hospitals turn out annually thousands of trained nurses, who in practicing their profession play an important part in maintaining the health of the community in which they work. The trained nurse is now called on to perform work which is vastly more important and vastly different from what was originally expected of her. In almost every phase of our civic and social life, she is called on to organize, to systematize and to teach, as private nurse, visiting nurse, school nurse, rural nurse, health department nurse, inspector and so on. The nurse is a most necessary and valuable aid to the physician, to the sanitarian and to social service. I cannot refrain from saying that it is high time that the medical profession and the public realize this, and that steps be taken to safeguard this profession from quackery and inefficiency, by establishing proper standards of education, which hospital training schools must meet, and by demanding compulsory registration for the nurse as well as for the physician, the pharmacist, the dentist, the osteopath and the barber. It will come and it will be the more to our credit that we show an intelligent interest and an early interest in bringing about this desirable result.

When we consider the work of the hospital in its broadest sense, we realize that it is not simply a place where sick people are cared for, but it is an educational institution of great value where those things are taught which mean health and happiness.

There is another side to the question, however. Has the hospital fully measured up to its opportunities, has it fully met the needs of the community? I think not; and I wish briefly to speak of a few of the possibilities for still further service. I do not pretend to say that there remain only a few questions to solve. Some hospitals are as nearly perfect as our present ideas can conceive, but many others are far from having attained that standard.

The first question which I wish to present to you is the need of a private or semiprivate service for patients of moderate means. The practice of medicine is now highly specialized. While people with ordinary ailments are satisfactorily treated by the average doctor, as soon as a person becomes seriously ill with any one of a large number of diseases with their usual complications, that person is no longer safe in the hands of the average doctor. If the doctor is intelligent and honest, he calls in some other doctor of larger experience and greater skill. He, in turn, may call in a specialist, who may advise a Roentgen-ray examination, after which still another doctor is consulted. Now, if the patient be a poor man, he may go to the hospital and in the public ward get all of this for nothing, or for a modest charge well within his means. If the patient be a man of large means, he of course has no difficulty. But if the patient is a member of that large class—those in moderate circumstances—earning a salary of from $1,000 to $2,000 per year, with a family to support, he cannot afford to pay the customary fee for such services, either within or outside of the hospital, for his pride prevents him from going into the public ward. What is to be done for him? In my opinion a hospital service between the public ward and the expensive private room, for the benefit of this class, represents a very great need. How shall this be provided? Obviously, it is not the duty of the city to provide such a service, the need of which arises simply because of the patient's pride and lack of funds. Equally obvious is it that funds given strictly for the benefit of the poor should not be diverted to this purpose.

Assuming, therefore, that this service is much needed, it is apparent that it must be provided by special endowment or by the use of a portion at least of the unrestricted funds. Boards of trustees should be educated to appreciate this need. Furthermore, it may safely be said that the amount required would probably not be larger, if any, than that which would be required to support the same number of patients in the public wards. In other words, the difference between the amount paid by the patient and the cost would not be much more in the one instance than in the other. It is taken for granted that while the patient could and would pay a moderate charge for privacy, he would not be willing, even if allowed to do so, to pay more than the usual ward rate for attention in the public ward. Therefore, the net cost to the hospital would be about the same in either case.

It is a subject which requires the careful consideration of hospital authorities. While I do not think it is a measure which should be adopted in a teaching hospital, because of the complications, it should be considered carefully by those which are not used for teaching, which represent the vast majority.

In line with this is the question of a pay clinic, or dispensary for the same class. The reasons for this are the same as those mentioned above, namely, the expense of getting competent advice when it is required from one or more specialists. There is a large class of patients who are able and willing to pay a moderate fee, but who cannot meet the regular fees of competent specialists. There are many who need such advice and who do not need to enter a hospital for treatment. The free dispensary is not for these, nor will they go to the free clinic and take their turn with large numbers of their less fortunate fellows, and yet they need a place where they can go and get just such advice as can be obtained in the free dispensary. Indeed, the fact that they have gone to the dispensary for advice has, in my opinion, been somewhat responsible for the talk about dispensary abuse. Yet many of these patients would gladly have paid a moderate fee and had no intention of imposing on any one, but were simply trying to get what they needed at a price within their means.

For this class, then some system needs to be devised by which they can get the necessary examination by one, two or three specialists at a fee within their means. Of course the argument against such a clinic will be that it interferes with the private physician. It is true it would interfere with the private physician, but if we recognize the need of such a clinic, we at the same time admit that the average physician does not fill the bill and cannot give the patient proper advice or treatment. Furthermore, it is an argument for fewer physicians better trained.

While a number of free dispensaries are necessary in every large city, there would not be need of more than one of two of these pay clinics. A consideration of the trend of modern medical practice, a superficial study of the desires and perplexities of a large number who seek advice from the hospitals, is sufficient to demonstrate that some provision should be made for those who can pay only moderate fees. Take as an example the clerk who earns from $1,000 to $2,000 per year and has a family to support. He makes both ends meet and that is all. It is for this man, as a representative of this class, that the pay clinic is needed.

The clinic should be organized very much as our efficient free dispensaries are organized. A few carefully chosen men, representing the different branches of medicine and surgery, should constitute the staff. The fees should be such that the patient could get competent advice at a total expense within his means, say for $10, and subsequent treatments or examinations for a small sum, say $1 or $2. The clinic could be run at night, so as not to interfere with the regular hours of the staff members. Such a clinic is urgently needed in every city of considerable size. The chief difficulty will be found in educating the rank and file of physicians to appreciate this need and to give their support. It is time that we gave serious consideration to this subject, for a solution of some sort must and will be found.

Finally, I wish to call your attention to one other problem that needs attention and which represents one of the weak points of our present hospital and social system. All hospitals are discharging, every day, patients whose physical condition requires some changes in the mode of life of the individual. The patient may be a stevedore or a truckman, with a weak heart, or he may be a mechanic who has lost a leg or an arm, or he may be partially paralyzed, or he may be suffering from any one of a number of conditions which make it impossible, or at least inadvisable for him to return to his old employment. These patients are being discharged day after day with advice, good advice to be sure, but which, the chances are, not one patient in ten can carry out unaided. The patient with the weak heart, who has always been a stevedore, and whom we tell not to do any work which involves a physical strain, is bound sooner or later to go back to the only sort of work he is familiar with, unless someone makes it his business to see that he gets employment suitable for him. This class of patients needs assistance simply to find suitable employment, and this aid can be supplied temporarily by someone in the social service department to whom this special work is delegated. But what of the man who has lost a leg, or an arm, or both, or who is permanently crippled? He is another and more difficult problem, for the only remedy is reeducation. He must be taught some work or trade which, even in his crippled condition, he can do as well as the man who is physically sound; or if that is impossible he should be taught something which will enable him to be, at least, partially self-supporting. To enable the individual to retain his self respect, when otherwise, as a useless member of society, he would lose it, is something well worth while. The hospital takes the patient in, patches him up and does a good job so far as it goes, but when the hospital sends that man out with advice which it is a foregone conclusion the man cannot follow, that is where the process falls short of being complete. Is this completion of the process the problem of the hospital? you may ask. I do not think so, and yet some agency is necessary to complete the work so well done up to this point, and the failure to supply such an agency means a tremendous waste of human material and oftentimes a repetition of work again and again.

I do not think it is a problem of the hospital, because it is a problem with every hospital, and for every hospital to attempt to do this work for its own patients means a great reduplication of work and a great waste of money. In my opinion there should be one central agency for the community, to which all hospitals could refer their patients of this class, with the proper prescription as to work to fit the condition. That agency would have to meet two problems; that of finding suitable employment for those who are simply physically weak, and the second and more difficult problem of teaching the cripples and the patients with the more severe cases of physical defects a new trade.

To solve this problem adequately is a big undertaking, but it is well worth while. It is a community problem, and an agency or institution to meet this need is just as much needed as a hospital. Consider the possibilities, the preservation of the self-respect and courage of these men and women, the finding for them, or the creation for them, of a useful existence, when unaided they are doomed to lives of idleness, uselessness and despair. It certainly presents great possibilities of increased efficiency in our present system.

We have had examples of the possibilities in the institutions for the blind, Dr. Hall's pottery at Marblehead, and Dr. Jaeger's Hospital of Hope in New York. All of those who have had much to do with hospitals will recognize the need.

I wish further to make the point that this work should not be based on appeals to the sympathy of employers, but on demonstrating or developing the fitness of the individual for the job. Sympathy employers may have, but they cannot be expected to clog their machinery with the unfit. I cannot at this time go into the subject at greater length. I wish, however, to urge the importance of this subject.

These are a few of the problems still awaiting solution and they loom up large. Ten years ago a hospital authority remarked that it seemed to him that most of the hospital problems had been settled. I hardly think we could agree with him, even now, only ten years later, for as I see it, the modern hospital is becoming an increasingly important factor in every community, both in the preservation of health and as an educational institution.

THE ESSENTIAL FACTORS IN THE DIAGNOSIS OF CHRONIC GASTRIC AND DUODENAL ULCERS *

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This review is undertaken to emphasize proved clinical factors and briefly to consider various phases of experimental, clinical and therapeutic advancement in their application to the diagnosis of benign, chronic gastric and duodenal ulcers. Our observations are based on the study of 2,400 cases of gastric and duodenal ulcers operatively demonstrated in the Mayo Clinic from 1900 to 1914, inclusive, with an especial summary of the cases of 1913 and 1914.

DIAGNOSIS

A skilful anamnesis, in the absence of extensive clinical observations or direct roentgenologic evidence of a lesion, is still the most important factor in the differential diagnosis of lesions causing gastric disturbance. With regard to ulcer, characteristic chronicity or remission of symptoms is readily apparent in the case records in over 80 per cent. of all our proved cases. The principles emphasized by Graham[1] since his earliest observations are as effective today as then and are the accepted diagnostic criteria in a large daily experience. Pyloric and duodenal ulcers in which complications are not far advanced invariably manifest periodic exacerbations. Seasonal variations, especially of spring and fall, appear in almost 40 per cent. of all cases. Nervous and physical fatigue, infection and exposure, dietetic indiscretions, toxic intestinal disturbance, etc., are prominent factors influencing recurrences. Between seizures complete relief from symptoms is the rule although frequently in ulcers situated well up along the lesser curvature remission rather than periods of complete relief may occur. In general the greater number of these patients have had symptoms for from five to twenty years, in our experience, few less than one, and a constant average of twelve and one-half years. During the period of attack, pain or distress, variable in character and intensity, is the common and constant symptom in nearly all cases.

Of secondary diagnostic significance are the location, type and area of radiation of the pain. The time of pain and method of its control are of primary importance. The complex of chronicity and periodicity of attacks in which pain or distress and the usual association of symptoms repeated uniformly day by day during the attack and bearing a fairly definite relation to food intake and control is of primary clinical importance in the diagnosis of 80 per cent. of cases of uncomplicated peptic ulcers. In the remaining 20 per cent. this complex may be irregular, atypical or almost entirely absent; or the symptoms may be "mixed," owing to coincidence of disease in contiguous organs, which occurs in about 16 per cent. of all cases of ulcer. It is this group which often taxes the resources of the clinician, but errors in diagnosis do not easily occur if the possibilities are constantly borne in mind especially in cases (1) in which a perforative process or a painful spasm simulates hepatic colic, (2) in cases in which ulcers had become chronic and complicated when the first symptoms appeared, and (3) in cases suggesting a malignant process, the result of an extensive ulcer, hemorrhage, cachexia and perhaps a palpable inflammatory mass.

Clinical differentiation between gastric and duodenal ulcer is extremely difficult and in most instances wellnigh impossible. This has been the opinion of most observers. With great regularity late pain and the nature of hemorrhage in proved gastric ulcer may suggest duodenal lesion. Then, too, not infrequently the earlier onset of pain in some cases of duodenal ulcer, suggests gastric lesion. In about 5 per cent. of all ulcers coincident lesions in the stomach and duodenum are noted, an incidence which increases our difficulties. In our experience and in that of many other observers the Roentgen ray is of inestimable value. In this field it has its most practicable application besides occasionally furnishing the first reliable evidence to indicate the presence of ulcer; but too great reliance must not be placed on this; for, valuable as may be the information afforded by the Roentgen examination, it has its limitations. The degree of demonstrability of gastric ulcer is directly concerned with three factors: that is, position, size and depth of the ulcer. The direct sign of irregularity of the gastric contour (niche, accessory pocket) may be wanting in instances in which the ulcer is situated on the anterior wall, high up in the cardia and when it involves the pyloric segment; should it be shallow, "slit-like," it may not be successfully demonstrated.[2] Indirect and auxiliary signs, however, in combination with clinical data, may be helpful in establishing the diagnosis. The strikingly frequent occurrence of bulb deformity or hyperperi-

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* From the Mayo Clinic.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Graham, Christopher: Diagnosis Between Duodenal Ulcer and Gallstone Disease, The Journal A. M. A., Feb. 9, 1907, p. 515; Differential Diagnosis of Diseases Causing Gastric Disturbances, Northwestern Lancet, 1910, xxx, 139.

[2] Carman, R. D.: The Diagnosis of Gastric Ulcer by the X-Ray, Read before the Kansas Medical Society, Kansas City, Kan., May 5, 1915.

stalsis with residue in duodenal ulcer is worthy of note from both the point of diagnosis and localization.

The continuous or intermittent presence of altered or fresh blood in the gastric extract, the absence of evidence pointing to gross motor disturbances and the situation of pain and tender point to the left of the median line are strong presumptive evidence of gastric ulcer. Clinically, this general observation can be made: Uncomplicated types of duodenal and pyloric ulcer are invariably clear-cut throughout their life history; the longer the period between intake and pain, the lower the ulcer, as a rule; the more prompt the onset and the briefer the duration of pain, the higher the ulcer. In ulcer of the stomach proper this may not be so clear-cut as in duodenal or pyloric types, nor are the day-by-day symptoms so clearly defined. In ulcers well above the pylorus the symptoms are likely to be continuous, or remissions rather than intervals of complete relief are likely to be noted. The pain is not so often relieved by food; small amounts of food may give relief, while increased amounts may cause distress; more care as to diet is necessary; if bleeding occurs, hematemesis predominates; vomiting plays a more frequent rôle even in the absence of obstruction and affords relief; soda relieves pain when food does not; pain begins earlier, as a rule, often disappearing before the next meal, for obvious reasons, in the absence of stasis or marked hypersecretion. Thus the food-relief is minimized; but pain from one-half hour to two hours after food is quite the rule and is of diagnostic significance. Too much clinical significance cannot be placed on reliable evidence of gross hemorrhage in the presence of other symptoms characteristic of ulcer. This complication, however, occurs in only about 35 per cent. of all chronic gastric and duodenal ulcers. The association of hemorrhage with the ulcer-complex makes for safe diagnosis of ulcer in 95 per cent. of all cases. In 5 per cent. of all ulcers there is a silent bleeding type in which blood is regularly found in the stools but more or less complete absence of other usual clinical symptoms of pain, hyperacidity and food ease. Benign ulcer, unlike cancer, bleeds intermittently. Positive analysis of occult blood in the stool on limited examination was present in about 25 per cent. only of the cases studied. Hemorrhage has been noted in 2 per cent. of all cases of chronic appendicitis associated with marked gastric disturbance, while it is as high as 5 per cent. in chronic cholecystitis associated with the gastric reflex. In these cases the hemorrhage is probably due to primary follicular ulceration of the gastric or duodenal mucous membrane. More extensive observations on the frequency of occult blood, of general blood morphology and its diagnostic significance in ulcer are now under way and will be the subject of future consideration.

Briefly stated, in those organic conditions which most frequently cloud the diagnosis—chronic cholecystitis and cholelithiasis, chronic appendicitis, etc.—we obtain our greatest diagnostic aid from the irregularity of symptoms during the period of attack. This irregularity is chiefly concerned with the time of appearance of pain and the influence of food. Nothing follows in sequence day by day, perhaps due to the fact that the stomach behaves properly unless irritated by the contiguous lesion and this extrinsic lesion is irregular in its influence. Judging from our case records, chronic catarrhal or "strawberry" cholecystitis very perfectly and most frequently simulates the ulcer-complex. The features of chronicity and "spells" (of invariably briefer duration, however) with characteristic pain, hyperacidity and flatulency having some food relation, the absence of colic, icterus and localizing signs are not uncommon. In order to lessen diagnostic error, daily clinical observation, repeated gastric analyses under variable circumstances, examination of the feces and, finally, the therapeutic management based on the well-known principles laid down by Sippy[3] may be necessary. It is unnecessary to comment on the importance of having in mind and recognizing these types of chronic painful dyspepsia most frequently having their origin in these extragastric lesions. Of considerable moment, too, is the frequency of lesions coexistent in the gastroduodenal, biliary, pancreatic or appendiceal systems in which disturbances engendered by one may overshadow or make irregular the symptomatology of the other so that to the conceits of surgery must be left the ultimate diagnosis in too frequent instances.

Test-meal analysis so essential to gastric diagnosis has also its limitations. In the absence of definite evidence of blood, stasis, hypersecretion in the fasting contents, cardiac obstruction, etc., the findings are of value in so far as they are correlated with the clinical and roentgenologic data. They constitute a link, often a decisive one, in the chain of evidence. The instances of normal or subnormal acid value in the presence of a peptic ulcer occur in about 20 per cent. of all cases; on the other hand, hyperacidity and hypersecretion, even stasis of the first degree, are only too frequently associated with functional states, ptosis and extragastric lesions. These conditions would soon lead to diagnostic confusion if too much dependence were placed on a single or even a repeated gastric analysis. Again, on account of purely physical conditions a considerable residue may be overlooked as shown by the contribution of Harmer and Dodd.[4] This disadvantage can be largely overcome by the use of a lavage tube of proper consistency, calibration and ample fenestration such as is now in common use. The researches of Rehfuss[5] and his associates have made us revise our estimate of the normal contents of the fasting stomach. In selected cases the fractional study of gastric digestion by means of the same investigators' tube and methods has proved to be of practical diagnostic value. Hyperacidity is the rule in 60 per cent. of cases of gastric ulcer and hypersecretion, also in ulcers at or near the pylorus. These features, singly or combined, are noted in 75 per cent. of all duodenal ulcers. A considerable hypersecretion of 200 c.c. or more, likewise the recovery of retention contents of our modified Riegel meal after from twelve to fourteen hours invariably argues for a lesion or organic stenosis, especially if the findings are constant. The determination of gastric motility is of diagnostic importance second only to secretory function or disturbance and for obvious reasons the former is of especial interest to roentgenologists.

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[3] Sippy, Bertram W.: Diseases of the Stomach, Practical Treatment, Musser and Kelly, W. B. Saunders Company, Philadelphia, 1912, iii, 336; Gastric and Duodenal Ulcer: *Medical* Cure by an Efficient Removal of Gastric Juice Corrosion, The Journal A. M. A., May 15, 1915, p. 1625.

[4] Harmer, T. W., and Dodd, W. J.: Sources of Error in the Use of the Stomach Tube for Diagnosis, Arch. Int. Med., November, 1913, p. 488.

[5] Rehfuss, M. E.; Bergeim, O., and Hawk, P. B.: Gastro-Intestinal Studies: I, The Question of the Residuum Found in the Empty Stomach, The Journal A. M. A., July 4, 1914, p. 11; II, The Fractional Study of Gastric Digestion with a Description of Normal and Pathologic Curves, The Journal A. M. A., Sept. 12, 1914, p. 909.

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Carman and Miller[6] conclude that their bariumized carbohydrate-meal method is a more sensitive test for gastric motility than the modified Riegel meal as commonly used in our clinic; that the modified Haudek double meal method is more informative than tubing after a motor-meal test since the former not only shows delay of evacuation beyond six hours but also yields information as to hypermotile conditions. Their conclusions are based on a comparison of results of both examinations in 950 patients who came to operation. The lesions were as follows: appendix, 125; gallbladder, 311; gastric ulcer, 109; gastric cancer, 137; duodenal ulcer, 268. Of these patients 220 (23.1 per cent.) showed a six-hour barium residue; 131 (13.7 per cent.) had food remnants after fourteen hours or longer. The majority (209, or 90.4 per cent.) of the 220 patients showing a barium retention were found to have cancer, or gastric or duodenal ulcer. They further conclude that a distinct residue after six hours from the barium meal given under prescribed conditions was in 90 per cent. of instances indicative of grave pathology, and usually denoted obstruction at or near the pylorus.

From personal observation we can concede a more sensitive test for motility in this method, especially in case of intermittent or low-grade retention dependent on pylorospasm, incomplete stenosis and on lesions of the accessory digestive system. One may add that the comparison of results between the two methods is hardly fair, principally because of difference in the time element and other features which must be taken into consideration. The motor meal under proper circumstances will continue to be a most practicable index of gastric motility—a fact conceded by eminent roentgenologists and emphasized by clinicians following observations made from the results of both methods. By the latter method one has the additional advantage of being able at the same time to estimate the secretory function of the stomach.

STATISTICAL STUDY

Exclusive of those cases in which a consistent diagnosis of gastric or duodenal ulcer was made and medically treated, there were 1,078 cases operatively demonstrated during the years 1913 and 1914. Of these, 264 were gastric and 814 were duodenal. Coexistent lesions in both organs were noted in 44, or 4 per cent. The average ratio of gastric to duodenal ulcers is well shown in this series, about 1 to 3, that is, 75 per cent. of the ulcers were duodenal. Of the 264 cases of gastric ulcer, 171 occurred in males and 93 in females. The average ages were 47 and 44.5 years, respectively. The average duration of symptoms was 9.8 years. In about 80 per cent. the course was intermittent, free intervals alternating with "spells" of variable duration, regular (40 per cent.) or irregular (49.5 per cent.) in frequency. In 50 per cent. the complaint was continuous and progressive over periods of from several months to several years prior to operation. Irrespective of the situation of the ulcer, pain appeared within 4 hours after meals in 85 per cent. of the cases; in over 30 per cent. it was present within 2 hours, in 55 per cent. within 3 hours, regarded as constant in 3.8 per cent. and irregular in 3.4 per cent. Definite nocturnal pain only occurred in 6 cases, or 2 per cent. Pain was controlled by food or alkalies, or both, in 180 cases. The majority of these (84 per cent.) showed relief after food, while alkalies alone gave relief in 15.6 per cent. There was a fairly definite history of bleeding (hematemesis or melena) in 73 cases, or 27.6 per cent. of this group; about 41 per cent. had hematemesis only, 15 per cent. melena, while both hematemesis and melena were mentioned in 44 per cent.

Gastric analyses were carried out in 255 cases; 38 per cent. of these showed presence of altered blood in the extract. Gross retention was evident in 33.3 per cent. The average total acidity was 54; the average hydrochloric acid was 42. In 18 per cent. the acid values were normal or below. The absence of free hydrochloric acid was shown in 13 cases. Under such a circumstance the possibility of carcinoma, syphilis or associated disease was evident. Five of these patients have since died from malignancy, three now apparently show malignancy; in the others the advanced age associated with considerable fresh blood in the extract, gallbladder disease or other pathologic lesions explained the achlorhydria.

The generally accepted complex of ulcer was more or less definitely present in 81 per cent. of the 212 cases; irregular but suggestive in 6.8 per cent.; classified as irregular in 5.3 per cent. In the remaining 7 per cent. the picture was atypical or the record was incomplete. A primary diagnosis of gastric ulcer was made in 174 cases, or 66 per cent.; an alternative one in 21 cases (8 per cent.). Duodenal ulcer was the primary diagnosis in 47 cases (27 per cent.). The Roentgen ray gave definite assistance in 65 per cent. of the 113 cases examined in this series.

The situation of the ulcers was as follows: the lesser curvature in 167 cases, or 63 per cent.; the pylorus, 35, or 13 per cent.; total ulcers at or near the pylorus, 87, or 33 per cent.; posterior wall, 27, or 10 per cent.; anterior wall 6, or 2 per cent.; 2 gastrojejunal ulcers secondary to gastro-enterostomy. Multiple ulcers were noted in 15 cases, or 5.6 per cent.

The complications were: advanced cicatricial pyloric stenosis, 11.7 per cent.; evidence of perforation, 28 per cent.; perigastritis with adhesions to neighboring structures, 28 per cent.; questionable malignancy, 11.7 per cent.; appendiceal disease, 33.7 per cent. In less than 25 per cent. of all cases was there no complicating factor, a fact which illustrates the advanced stage of the process at the time of first examination.

Of 814 cases of duodenal ulcers 628 (77 per cent.) were males and 186 (22.8 per cent.) were females. This characteristic disproportion in sex incidence Wilkie[7] has probably explained on an anatomic basis. The average age was 43 years and the average duration of symptoms was over twelve years. The clinical course was intermittent in 95 per cent. of all cases, and periodic in 50 per cent. Continuous preoperative complaint of variable duration was noted in 26 per cent. In more than 85 per cent. the pain appeared in from two to five hours after taking food; in the remainder it appeared within two hours. Nocturnal pain only was given in 6 cases (7 per cent.). Definite relief by food was noted in 67 and partial or irregular relief in an additional 15 per cent. Relief by neutralization was present in 39 per cent. Hemorrhage was reported in 208 cases (25 per cent.) and was classified: melena, 8.8 per cent.; hematemesis, 6 per cent.; both melena and hematemesis, 10.5 per cent. The acid values averaged 20 per cent. higher than in gastric ulcer and in only 7 per cent. were they below the accepted normal standard.

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[6] Carman, R. D., and Miller, Albert: The Roentgenologic Determination of Gastric Motility with a Comparison of the Results Obtained in a Series of Cases Examined Both by the Roentgen Ray and the Test-Meal, Arch. Int. Med., to be published.

[7] Wilkie, D. P. B.: Observations on the Pathology and Etiology of Duodenal Ulcers, Edinburgh Med. Jour., 1914, xiii, 196.

A primary clinical diagnosis was made in 543 cases (66.7 per cent.) and an alternative one in 67 cases; that of primary gastric ulcer in 88 cases (10.8 per cent.). This totaled 85.7 per cent., the usual average in all the series recently studied. Of 251 cases in which the tentative diagnosis of gallbladder disease was also made, 51 (20 per cent.) showed this disease present and 51 ulcers (22.3 per cent.) were shown to be chronic perforating. Reviewing the case histories, the ulcer complex was fairly regular in 71 per cent., suggestive in 7.2 per cent., and irregular in 13.2 per cent.

At operation advanced pyloric stenosis was shown in 251 cases (30.8 per cent.); perforation in 26.8 per cent.; periduodenal inflammatory disease in 23.5 per cent. Associated disease in the appendix occurred in 48 per cent.; in the gallbladder in 9.7 per cent.

A more detailed comparative study of the statistical end-results in these two groups serves to bring out the salient differential clinical features as previously mentioned.

ABSTRACT OF DISCUSSION

Dr. J. N. Hall, Denver: We have the very great advantage of knowing what we are discussing, since the diagnosis has been proved in every case. There is perhaps no other common disease so frequently and so closely mimicked in its symptomatology by several other diseases as is peptic ulcer. We have all seen patients treated for twenty years for gastric ulcer, but cured by the removal of the chronically inflamed appendix, with no ulcer present. I have recently had one of Ewald's patients so cured, and it is doubtful if he is surpassed in diagnostic ability along this line by anyone in the world. Chronic inflammation of the gallbladder, chronic gastritis of the hyperacid type, small omental hernias and even the tabetic crises, are other common causes of confusion in diagnosis. Whenever ulcer is suggested but the history is atypical, the evidence as to the possible presence of chronic appendicitis should be reviewed, for such a condition will often be found. I should personally lay more stress on the search for unilateral muscular rigidity, which is probably of more decisive value as evidence of a definite structural lesion than pain and tenderness combined. In no procedure is the possession of an educated touch more imperative. The appearance in the anamnesis of jaundice and biliary colic has been the cause of diagnostic defeat in many cases through failure to recognize that in duodenal ulcer the patency of the common duct may be compromised, either mechanically or through an infective process. We should doubtless give the appendix more credit than it now receives as a prime cause of peptic ulcer, since the commonly induced hyperacidity in chronic appendicitis is probably a potent factor. It is interesting to note that the essayist found the appendix inflamed in 30 or 40 per cent. of the cases. If the ulcer does not heal promptly under proper medical measures, operation should certainly be advised. One comforting thought under these circumstances is that we shall save more than enough lives through the finding of unsuspected cancer to balance the mortality rate. The fact that many ulcers may be found by opening the stomach or duodenum when they would have escaped detection otherwise, should be given due consideration. There are so many chances of finding cancer, pyloric or duodenal obstruction, serious adhesions, hourglass deformity, etc., that we practically always find more advanced pathologic changes than we anticipated. The acquirement of a drug habit or the development of arteriosclerosis, neurasthenic features or tuberculosis from the faulty nourishment must not be overlooked.

Dr. Max Einhorn, New York: I have mentioned on another occasion the reason for the discrepancy between the views of the Mayos regarding the frequency of ulcer and the views of other clinicians. The Mayos believe ulcer is two or three times as frequent as cancer. I have no doubt their work supports that opinion. But there is a difference in the material that comes to the surgeon and the material which comes to the clinician. Say I have twenty cases of ulcer, probably only one of those will undergo operation. The cases which undergo operation belong to those in which there is food stagnation, or the lesion is near the pylorus, and that is why the surgeons find duodenal ulcer so frequently. If we could open up all the ulcer cases, we would probably find ulcer of the stomach much more frequent than ulcer of the duodenum. As to differential diagnosis, I agree with Dr. Eusterman, that from clinical symptoms we can sometimes make a diagnosis, but usually we cannot do so. In the great majority of cases we will be able to make a more definite diagnosis on careful observation of the cases, especially as to the location of the ulcers. I have several cases in which the lesion was shown to be in the duodenum, whereas the symptoms would indicate gallbladder trouble. There are of course cases in which the two conditions are present—duodenal ulcer and gallstones. This sometimes can be found out before operation by careful examination. The duodenal tube and the examination of the bile and duodenal contents may furnish a great deal of information as to the presence of gallbladder trouble. It has been my experience that in gallbladder disease the bile is not as clear as it should be when we take it out fresh from the duodenum.

Dr. J. A. Lichty, Pittsburgh: An essential factor under this subject is the differentiation between the acute and chronic gastric and duodenal ulcers. The differences of opinion between the internists and the surgeons hinge largely on the failure to make this differentiation. The difference is just as great as between an acute ulcerative endocarditis and an old mitral lesion in a compensating heart. If we can differentiate definitely between the acute gastric and duodenal ulcer cases and the chronic cases with their consequent deformity or disturbance of function, we can very easily decide what are medical and what are surgical cases. A year ago before this section Dr. Joslin of Boston spoke of his results in gastric and duodenal ulcers. He found that most of his patients did not come to the internist until they had their disease six years, and they did not go to the surgeon until they had their disease ten years. It is useless for the physician and surgeon to accuse one another of neglect, etc., when in six years so much damage may have occurred that neither the physician nor the surgeon can expect satisfactory results.

The Reward of Scientific Study.—The student does not study Nature because that study is useful, but because it gives him pleasure, and it gives him pleasure because Nature is beautiful; if it were not beautiful it would not be worth knowing and life would not be worth living. I am not speaking, be it understood, of the beauty of its outward appearance—not that I despise it, far from it, but it has nothing to do with science: I mean that more intimate beauty which depends on the harmony in the order of the component parts of Nature. This is the beauty which a pure intelligence can appreciate and which gives substance and form to the scintillating impressions that charm our senses. Without this intellectual support the beauty of the fugitive dreams inspired by sensual impressions could only be imperfect, because it would be indecisive and always vanishing. It is this intellectual and self-sufficing beauty, perhaps more than the future welfare of humanity, that impels the scientific man to condemn himself to long and tedious studies.—H. Poincaré.

MEDICAL ASPECTS OF OPEN AIR SCHOOLS *

SHERMAN C. KINGSLEY
Director of the Elizabeth McCormick Memorial Fund
CHICAGO

Medical examination of employees is becoming the practice in the industries of our country. This has been found necessary by business men, first, to conserve the health and welfare of the individual, and second, to promote efficiency. Safety first methods and principles are becoming matters of first importance in the life of our country. Shop sanitation and proper working conditions are requisites in a first class business organization.

There are 20,000,000 schoolchildren in the United States. These boys and girls spend 11,415 years in the schoolrooms of the land every school day. This means a total every school year of 2,283,000 years. School attendance is compulsory.

Any business responsible for the expenditure of this amount of time would find it necessary to apply efficiency tests to be sure that working conditions were satisfactory.

Anyone who has visited schoolrooms and is aware of the enormous amount of time required from the boys and girls of the land cannot help wondering how much time is lost through drowsiness, inattention and half asphyxiation due to badly ventilated and overheated schoolrooms. Government in the United States concerns itself with the direction of the individual perhaps less than any other great nation of the world.

The public school affords our one most conspicuous exception to this rule. We compel the boys and girls to go into the schoolhouse and occupy school seats. We keep each one in the presence of the teacher and under the direction and supervision of the school authorities for a period of six to eight years, at least. Our theory is that each boy or girl reared in the United States should have at least a grammar school education. We now know that less than one-half ever finish the grammar school.

Through the work of our juvenile courts, settlements and vocational guidance bureaus, our children societies and other agents dealing with boys and girls, we are beginning to understand some of the pressing problems of child life.

Health inspection in public schools shows that 12,000,000 of our 20,000,000 schoolchildren have physical defects serious enough to interfere with school progress. Careful study in many cities further shows that from 2 per cent. to 10 per cent. of the total school population has physical defects so serious as to render school experience practically useless and to render it unprofitable to spend public money trying to educate them unless something is done to correct physical defects.

Advocates of the open air school believe that the time to spend time and money on the individual is when he is young and when such effort and expenditure will result in benefits which will accrue to the individual, and not wait until it is necessary to deal with them as chronic invalids or as finished dependents.

Open air school advocates believe that 100 per cent. of the schoolchildren should have their fresh air and hygienic rights. In many parts of the country there is no reason why all schools should not be open air schools all the year around, because the climate affords no serious obstacle.

In other parts of the country, the winter months constitute a problem, but for the major portion of the year, even in the colder latitudes, all schools can have open air conditions. Even in the winter months, open air conditions can be much more nearly approached through the periodic opening of windows to let in the fresh air.

The debilitated child affords a special problem and, as was said before, it is estimated that from 2 per cent. to 10 per cent. of the schoolchildren are of this type, and this would mean somewhere between 400,000 and 2,000,000 such children in the United States.

The Elizabeth McCormick Memorial Fund of Chicago has made the open air school a special feature of its work. In the school year 1913-1914, there were twenty open air schools in Chicago with an attendance of over 600 children. In the case of 590 of these children, fairly complete records were kept.

The Board of Education furnished teachers and school equipment, and the Municipal Tuberculosis Sanitarium of Chicago cooperated in furnishing nursing service and in providing food.

The Elizabeth McCormick Memorial Fund employed special physicians, furnished clothing and other service necessary to the conduct of the schools. The children selected were of the undernourished, anemic and tuberculous type, and came mainly from the congested districts of Chicago. The average size family represented by the children was 6.15. Average number of rooms 4 plus. There was an average of 1.8 tuberculous members in each family represented by these children. The average rent was a little over $12 per month. The average income in the families represented by the children was $7.02 per individual per month.

This study of income was made in the latter half of the year 1913-1914, when industrial conditions in Chicago were normal. This income is a little more than half the standard established by the Juvenile Court of Chicago as a minimum on which a family of the size represented by these children can live and maintain health and efficiency. The figure set by the Juvenile Court is $12.60 per individual per month for such families.

Seventy-five per cent. of the children were diagnosed as tuberculous, meaning bones, joints, glands, etc.; 20 per cent. were suffering from anemia, and malnutrition; 5 per cent. were suffering from other defects, bronchitis, heart disease, etc. In addition, 188 had diseased tonsils; 165 had adenoids; 466 decayed teeth; 152 defective eyes, and then there were other minor defects. The families of a majority of these children were known to the clinics of the Municipal Tuberculosis Sanitarium. There were many other unclassified defects. In addition to these conditions, hours of retiring, irregular meals, conditions of sanitation and cleanliness in a majority of the homes were unsatisfactory.

First hand acquaintance with these children throws strong light on the reasons why at least some of our children fall out of school at an early age and why they are so illy-prepared physically and mentally for the duties of life. They help us to understand why our general theory of a grammar school education for all the boys and girls reared in this country is not

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

being made effective, and why more than half of them never attain this standard, and why such large numbers leave school with only fourth, fifth and sixth grade preparation.

Advocates of the open air school state that a thorough knowledge of each individual child is necessary and that this knowledge should recognize the child's physical as well as his mental individuality.

TABLE 1.—WEIGHTS (BOYS) IN COMPARISON WITH NORMALS

Age	No. of Boys	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	6	0.37	0.34	0.32	0.35
8	13	0.29	0.47	0.38	0.41
9	21	0.37	0.43	0.43	0.43
10	24	0.41	0.51	0.40	0.48
11	28	0.5	0.45	0.43	0.44
12	18	0.61	0.58	0.59	0.51
13	29	0.7	0.66	0.6	0.65
14	14	0.91	0.85	0.81	0.86
15	9	1.09	0.9	0.91	1.01
16	3	0.52	1.00	0.90	1.13

In order that careful medical work might be done, the Elizabeth McCormick Memorial Fund, for several years, has paid the physicians in the Chicago open air schools. This enables them to give the amount of time that is necessary adequately to deal with these children. The physicians have spent an average of about four hours a week on each of the nineteen schools. They find that it requires about a half hour to give each child a careful examination, and such examinations are made on admission, discharge, and once or twice during the year.

In addition, there is the daily running supervision which takes care of any special ailments, sees that physical defects are followed up and corrected, that children having elevated temperatures and who are indisposed, should be placed on rest. The nursing service which is furnished by the Municipal Sanitarium takes about an hour and a half a day of the nurse's time for each school. The nurse inspects the children daily, supervising taking of temperatures, taking care of any little injuries or physical needs, and visits the homes and helps to get the best possible cooperation with the school in the child's behalf.

TABLE 2.—WEIGHTS OF GIRLS IN COMPARISON WITH NORMALS

Age	No. of Girls	Actual Average Gains Per Month	Normal Gains According to		
			Holt	Ch. Bd. Ed.	Boas
7	4	0.24	0.33	0.36	0.35
8	10	0.45	0.38	0.35	0.40
9	27	0.44	0.36	0.39	0.40
10	20	0.44	0.52	0.44	0.45
11	28	0.55	0.5	0.49	0.55
12	33	0.65	0.86	0.65	0.76
13	21	1.02	0.77	0.80	0.83
14	22	0.85	0.71	0.90	0.80
15	4	0.52	0.65	0.74	0.70

Then there is a small number of children to each teacher. This makes it possible for her to know her children, and when she understands home conditions, physical needs and has the cooperation of nurses, social workers, juvenile court officers and other social forces of the community, she gets an understanding of her children that she perhaps never had before.

To begin with, she is usually chosen for her interest in the work and her general social as well as teaching sense. The children study under open air conditions. They have as much sunshine as possible and their work is made as varied and interesting as conditions will permit.

In some of the schools they have a daily shower bath, daily feeding and a rest period after the midday meal. The aim is to "weave all these features into a process of education and the hygienic way of life." Results are almost uniformly gratifying.

Children gain in weight, they increase in alertness, in spirit and interest and make better intellectual progress.

Improvement is also shown in the hemoglobin tests. The average gain in weight for these children in ten months was 4.95 pounds. This approximates closely what the gains of normal children of the same age and sex should be and is shown in the accompanying tables.

Tables 1 and 2 show that about half the children gain as much (or more) as normal children of the same age and sex, and about half gain a little less.

The following tables show the school progress of these children for their year in the open air school and the previous record of the same children in regular rooms.

TABLE 3.—SCHOOL PROGRESS OF 522 CHILDREN IN CHICAGO OPEN AIR SCHOOLS, SCHOOL YEAR 1913-14

1 child made three grades in this school year.
12 children made two grades this school year.
9 children made one and one-half grades this school year.
387 children made one grade in this school year.
113 children failed to make one grade in this school year.

TABLE 4.—SCHOOL PROGRESS OF 488* OF THESE CHILDREN PRIOR TO SCHOOL YEAR 1913-14 BASED ON THESE FACTS AND ASSUMPTIONS

First—The age and grade of each of the pupils was taken at the beginning of the school year 1913. Second—We assume that according to usual standards each child entered school between 6 and 7 years of age; that he continued in school, and that he should have made one grade each school year.

22 children averaged 0.50 to 1 year to a grade.
107 children averaged 1 year to a grade.
172 children averaged 1 to 1.50 years to a grade.
128 children averaged 1.50 to 2 years to a grade.
18 children averaged 2 to 2.50 years to a grade.
22 children averaged 2.50 to 3 years to a grade.
2 children averaged 3.50 years to a grade.
9 children averaged 4 years to a grade.
5 children averaged 5 years to a grade.
1 child averaged 6 years to a grade.
2 children averaged 7 years to a grade.

* Nine of the 522 children entered school in the school year 1913-1914; twenty-five had not completed one grade at the end of the school year 1912-1913, and therefore were not included in this table.

The open air school movement is spreading rapidly over the country. There is a deep interest in the physical welfare of schoolchildren, and it is the conviction of part of our people that the time to serve these children is when they are in the public schools; that it is not good business to allow them to sit for six or eight years with handicaps and defects which are preventing them from receiving the thing which the school wants to give.

New York City has 250 open window classes with the same number of children in each class as in the regular schools, and the promoters say the results are better than in closed rooms.

New York also has twenty-five classes for anemic children and in these classes there are twenty-five children, and here again they say the results are better than when these children go to the usual closed room. There is no feeding or rest period in these classes.

Many other cities have open window classes. In California and many other localities, the movement is spreading rapidly.

For the type of children we have been describing, we believe that something more than merely opening the windows is necessary if these children are to be restored to efficiency and made useful citizens.

In many places the penny lunch or diets of milk and crackers, sandwiches, or other less expensive methods of feeding are in vogue.

We believe that this work should have careful medical direction and supervision.

Children should not be subjected to extremes of temperature unless they are properly provided for it. There is no reason, however, why all the schools in the country should not approach much more nearly the open air schools than at present.

Even in climates where the winter temperature is a problem, windows can be opened at intervals and the rooms flushed with fresh air. The Creator has provided enough fresh air for all and almost any audience room is greatly improved by such frequent opening of windows to let the fresh air in.

One of our little boys in Chicago brought a companion to the school not long ago saying to the physician: "Say, Doctor, how sick has a feller got to be to get in this 'ere school?" The open air school advocates believe in giving all debilitated children in our schools the care and attention which will give promise of making them useful citizens, but they also believe that people should not necessarily be sick or debilitated in order to have their fresh air and hygienic rights accorded to them.

ABSTRACT OF DISCUSSION

Dr. B. Franklin Royer, Harrisburg, Pa.: We are indebted to Mr. Kingsley for placing before us in a perfectly sane and rational way some of the problems of school life, particularly the class of pupils requiring open air schools. Some of you may have been a little surprised to hear him make the statement that from 2 to 10 per cent. of schoolchildren require some form of special school care; and yet in many sections of the country the percentage runs even higher. In Pennsylvania we do medical inspection of schools perhaps on a larger scale than any other state. It is compulsory in districts of the first and second class; optional in districts of the third and fourth class. In fourth class districts the work is done by the State Department of Health. We have recently finished making an inspection of 468,000 rural schoolchildren; and in that group we found 70 per cent. defective, and 27 per cent. had defects of vision as shown by the crude test with Snellen's chart. Many of them would have shown other defects of vision had we been able to carry out more elaborate tests. What I more particularly want to relate, however, and it bears directly on the subject under discussion at present, is what we have recently observed in certain schools in the little coal town of Nanticoke, with a population of 8,000. Dr. Waters, the city medical inspector, in examining 365 pupils in the isolated eighth ward of that city, found a large number of the children having tuberculosis. He stood aside ninety-nine children in a school of 365 as probably having tuberculosis, and urged open air treatment. The physicians in the town made uncomplimentary remarks; the school board and local health board thought he was unduly radical and made diagnoses without proper information at hand, and suggested that he come to the state health department and ask us to make a confirmatory examination. We sent for this work Dr. Karl Schaffle, chief of our dispensaries, and Dr. Charles H. Miner, two of our best medical men, with large experience in examining tuberculous children. Nurses were sent along. A room was set aside where we might make physical examinations of chests of all suspicious children. To our surprise, out of a group of 120 children examined with great care, including the ninety-nine set aside by Dr. Waters, forty of them gave enough evidence of active tuberculosis to justify a diagnosis of this disease, and sixty were set aside as children who should undoubtedly have been in an open air school. That gave us a percentage of 17. Mr. Kingsley has put it at from 2 to 10 per cent. We have not attempted to work out the percentage in the better types of schools and in communities where well-to-do people live and better housing conditions obtain. However, Mr. Kingsley is certainly well within the limits for most communities.

In Nanticoke the school board was quite willing to cooperate, and immediately converted this entire school into an open window school, and are now planning to isolate in an open air school and teach separately those believed to be actively tuberculous, and to continue the great number of suspicious children in the open window rooms of the school now in operation.

The Department of Health has undertaken to correct conditions through the housing bureau, and has put enough pressure on the coal companies to make provision for building new houses outside the congested district, and we hope in this way to thin out and apportion to proper space the various families that are there, and eventually to do a great deal toward overcoming present conditions.

Dr. William C. Hassler, San Francisco: I would like to ask Mr. Kingsley and Dr. Royer whether in their sections they met with such opposition as the League for Medical Freedom, who object to the investigation of conditions in the home, and particularly among the schoolchildren?

Dr. Royer: School medical inspection was made compulsory in certain districts in Pennsylvania in 1911. No opposition appeared in these districts. The League for Medical Freedom, however, circularized every school board in districts of the third and fourth class, some 2,500 boards, where inspection was optional. A lot of them (1,500 districts of the fourth class) voted against inspection the first year. We took no note of the opposition and inspected in the districts where they refrained from voting against it. The next year half as many districts voted against inspection, even with the league's agitation continuing. The school boards have come around, fewer voting against it each year, and we are now inspecting practically everywhere. Their attack has been a complete failure. We have not opposed them at any time, and every blow they have struck has been a boost and has done us good.

Dr. N. K. Foster, Oakland, Calif.: I spend all my time as director of health in the Oakland schools. Five years ago I induced the board of education to build an open air school. It was in the yard of one of the larger schools, and it was decidedly open air. The east side was entirely open and the south and west sides had open louvers clear across, so there was never a lack of air. We filled this school by picking out all the worst defective children we could find in the large school, about twenty-three I think. At the beginning of school in August we weighed the children in both schools carefully and at Christmas time we weighed them again carefully. The children in the open air school had done the same work as those in the other school. We had not, as Mr. Kingsley speaks of their doing in Chicago, given them food or rest. The only difference was in the air. The children from the open air room had every one gained in weight and they showed a relative gain of 55 per cent. over the children from the inside. Their mental advance had been equally good, all of them being promoted although many had failed before when they were inside. Several of them even made two grades. Special teachers have often remarked to me how bright and wide-awake these children always are, in great contrast to those in the inside schools. There cannot be any question that we are stifling and destroying the vitality of many of our children by shutting them up in close, stuffy schoolrooms. The result of this in Oakland has been that we have from fifty to 100 new rooms, and every one of those rooms can be open air; that is, they are built in units so that the air comes in from two sides; the one side is fixed with windows that can be opened entirely, and on the other side windows can be opened so that there can be a cross draught. I think that the ventilating engineers with their wonderful schemes and ventilating machines are doing more damage to the schoolchildren than almost any other people—pumping in devitalized, dead air that has lost its invigorating qualities for them to breathe, keeping it at an even temperature without any disturbing currents, making many of the children in our schools stupid. I hope the time will come, and I hope the medical profession will let this strike deep into their hearts, that if we want to take any step to make our people strong and vigorous and well, it must be through open air schools.

Dr. F. E. Corey, *Alhambra, Calif.*: I have constantly asked our people, if the schoolchildren can be made better and restored to health by putting them in open air schools, why should we continue to keep the well children in closed schools. I have asked the school authorities in my community why they persist in building closed school houses when we know and have heard so much of the benefit of open schools, expending vast amounts of money to build architectural monuments to endanger the health of the rising generation. I believe that the mechanically ventilated school, just alluded to, is a menace to the health of future generations, and we ought to bring to bear all the influence we possibly can to defeat it. I have seen some such buildings, and they have distressed me beyond measure, and I cannot express too emphatically my disapproval and my desire that this matter may be agitated all over the country until we get some light into the minds of our school authorities. That is where the trouble seems to be.

Dr. Heman Spalding, Chicago: As to the question raised here about the opposition to school inspection, in Chicago we began the examinations without saying anything about it to anybody; just proceeded, and everybody wanted their children to be examined—almost everybody. Occasionally somebody would say he would not have his child examined. We said, "Very well. We don't want to examine him. Don't bother us. Just take care of your own child"; and we continued that way for some time. Then the League for Medical Freedom began to oppose somewhat, and through some means or other—I do not know what—we threw down physical examinations for a year. Then we began again, but at the present time physical examinations are made only of such children as come with a signed certificate from the parents giving consent. We get a pretty large percentage in that way—enough to keep our men busy all the time—and will continue in that way for the present. We have no law in the state of Illinois requiring physical examinations of pupils as they have in Pennsylvania. We are trying to get such a law. I do not have the figures to give. Mr. Kingsley has given his figures, but our figures are not available as yet to give you the details and results of our examinations.

Dr. B. F. Howard, Sacramento, Calif.: It has been well pointed out that the open air school is an important factor in the prevention of tuberculosis. I wish that some one might give us a definition of an open air school. We have all kinds of schools, from the country school with the cracks between the boards, to the city school with a goodly number of windows. I think with the open air school, or any school, we need, perhaps, quite as much what we might call an open air school teacher. I have been in a great many schools that could really be called open air schools if the windows were only properly opened, and that is particularly so here in California. We have all the facilities in the way of climate for conducting open air schools for all of our children; and yet one goes into schools where the windows are closed, most of the time. I would like to have in connection with this definition of the open air school some recipe for producing an open air school teacher.

Dr. L. M. Powers, Los Angeles: May I ask, Dr. Foster, if you have come to any definite conclusion which is better, for the boards of education or the health department to have control of the school inspection? I agree thoroughly with the doctor in reference to ventilation. I have been through all of that.

Dr. Foster: That is a question that would bring up a great deal of discussion. It does not matter whether the board of education or the health department handle it, so long as it is handled. It is merely a matter of private opinion whether the one or the other do it.

Dr. Thomas D. Maher, San Francisco: We have in San Francisco between fifteen and twenty open air schools, or cold air schoolrooms, and we also have one class of physically defective children, children who have been for some years under the observation of the Associated Charities; and we have in prospect, I am glad to say, an open air class for pretuberculous and tuberculous children. That is what we have in prospect for the coming year, and I am sure that we will find in the public schools many children not only suffering from tuberculosis, but pretuberculous children with enlarged lymphatic glands, and cases of that character. We have in California no mandatory laws compelling any school inspection. We are going along and meeting with only sporadic opposition.

Dr. Otto P. Geier, Cincinnati: Two queries suggest themselves to me as the result of hearing this paper. First, if the open air school does so much for the tuberculous child and for the pretuberculous child, why should we not at once take the next rational step and make all of our schools open air schools? Why should we wait until we find by physical examination that a child is pretuberculous before we begin to use this remedial agency, fresh air? I think we all go through the cycle. My attention in Cincinnati was first called to the open air school in connection with the tuberculosis hospital, and later on we got busy with our open air school to treat pretuberculous children; and I believe one of these days we will have to come to the proposition of treating everybody as pretuberculous and give them all open air treatment.

The doctors seem to fail singularly with a thing they are working with all the time, and that is the open air hospital. We have just finished building a $4,000,000 hospital, and we have done the usual thing—put some porches on it, and roof gardens; but the expense of removing patients to inadequate porches and the expense of moving up to the roof garden is prohibitive. I believe that when that hospital builder finally arises who has the courage to turn the hospital inside out and put the inside on the outside, and just a few dozen rooms on the inside so that they may be cared for, then we will make some progress in our hospitals.

Mr. Sherman C. Kingsley, Chicago: I entirely agree with the point of view mentioned here two or three times, namely, that all children should have fresh air and plenty of it.

The ideal of open air school advocates is fresh air and hygienic rights for 100 per cent. of schoolchildren. I do not pretend to know the truth about ventilation. Many scientific studies are now in progress. The scientific experts, so far, do not seem to agree even among themselves. What we understand now concerning the ventilating system in vogue is that windows and doors must be kept shut. Not long ago it was almost equal to separation from the service for a teacher to violate this rule. It is a question whether we protect anything but the ventilating system. My own belief is that whether you have a ventilating system or not, or whether you keep the windows closed and keep the air moving by mechanical process, sending it through the pneumatic laundry to be washed and returned, no matter what the process, I believe that the teacher and the children themselves will be benefited by frequent opening of the windows and letting in some of the air which is always in abundance on the outside of our buildings.

Over and over again, even in so-called ideally ventilated rooms in new buildings, I have seen adult audiences revive, freshen up and regain the look of human intelligence on the opening of windows. They freshen like a wilted garden after a shower.

It seems to me that some kind of mechanical device should be helpful in getting air into the inside of large buildings where there are inner rooms, corridors and recesses. There are days when the air is stagnant and does not move without some provocation. However, I feel that ventilating systems ought to be used and made to serve, and not venerated and worshiped. Air has qualities, not motives and impulses. We sometimes act as though it would be accommodating and do the thing which is expected of it, just because we expect it.

It is my belief, as I said before, that the efficiency of every school building in the land will be greatly increased by the periodical opening of windows and letting in the air. I believe that both teachers and pupils should be taught to open windows rather than to close them and to feel that opening them was something they never ought to do. We know that we all feel better in the open air. All you need to do to convince yourself, is to look at the children when they gather in the schoolroom on September 1 and then look at them again in June. The open air and outdoor life that they get in the two months keeps them going for the other ten.

THE SANITARY ENGINEER IN PUBLIC HEALTH WORK *

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AND

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HARRISBURG, PA.

For efficiency, a public health organization in a representative form of government should, in our opinion, be directed by one versed in sanitary and practical medicine as well as in sanitary engineering. A little training in entomology and geology would add to the efficiency of the executive. He should be clothed with great police powers. The foundation of the organization should be a statistical division, including vital, morbidity and marriage statistics. Cooperating and depending on this statistical division, a medical division should be established, headed by a medical chief with an experience of at least ten years in general and special hospital work and in epidemiology. The medical associates should be those fitted for bureau work and for field service throughout the territory over which the department has jurisdiction.

Independent of the responsibilities generally recognized as belonging to a medical division, it is essential for the best work to have a system of hospitals for communicable diseases. In connection with the department there should be a corps of sanitary engineers and a well-equipped laboratory with workers in pathology, bacteriology and chemistry.

Divisions for tuberculosis sanatoriums, dispensaries and for the distribution of biologic products are necessarily required.

Another important division should be one on housing, headed by a sanitary engineer or a broadly educated medical man.

To promote economy and efficiency in all the other divisions, the department must have a technical purchasing and bookkeeping division.

With the divisions already mentioned it is desirable that there should be one on foodstuffs and drugs, including, of course, milk hygiene, and all these should be accompanied by a division of education and publicity, for in a representative form of government the police medical laws cannot be readily enforced if they are far in advance of the intelligence of the people. The publications of the division should be both medical and literary, and as important as any is the utilization of the newspapers, as the latter are the only publishing channel that reaches every fireside.

Our personal experience has also impressed us with the great necessity for doing medical school inspection, and, in handling communicable diseases, of having a well disciplined staff of licensed nurses; they may not only teach the children in schools, but also teach the poor in their homes.

With this discussion of the suggested divisions of the organization we can better understand the place of the sanitary engineer in public health work.

The medical division is informed, through the statistical office or division, of the undue prevalence of infectious diseases in any community, such as are transmitted by water, milk or foodstuffs. The sanitary engineer often plays a most important part in overcoming the trouble.

While the medical inspector is analyzing samples of water and milk, and studying the movements of the individual persons who have been ill, and the character of the food supplied to them, the sanitary engineering staff traces the source of these supplies and their ultimate distribution in the infected territory. The sanitary engineer often definitely locates the source of infection, particularly when the public water supply is at fault. His services may always be employed with advantage in the enforcement of such sanitary reforms as may be required to wipe out the source of danger and in planning for the elimination of further dangers from it. It is only when the engineering department cooperates closely with the various other subdivisions of a public health organization that the executive officer may properly control and combine their efforts, direct their several separate plans of investigation, harmonize their results and do the state's work economically and effectively.

The medical officer and the sanitary engineer must work together in field epidemics, particularly of water-borne disease; let this be direct or indirect. The medical officer takes precedence and reviews with local men both the probable source of infection and obscure cases of the disease. An engineer follows and enforces disinfection procedure as well as abatement of nuisances detrimental to health, and such general sanitary clean-up as may be required. From the coordinated studies of the medical and sanitary engineering services of a department the executive officer naturally draws his inference on which he bases judgment and plans reforms, determines results and anticipates further needs.

Profiting by the strictly medical experience gained in the suppression of epidemics of water-borne disease and the results of bacteriologic research, the sanitary engineer investigates and studies the water supplies of the state generally, and the watersheds of such supplies, for the purpose of protecting and furnishing a potable water to the people and for the purpose of preventing the occurrence of epidemics in large centers of population.

A very large part of the activities of the sanitary engineer in a health organization consists in making those studies for the executive officer that enable him to pass judgment on the plans of water works and sewerage works which are to be built to serve the various

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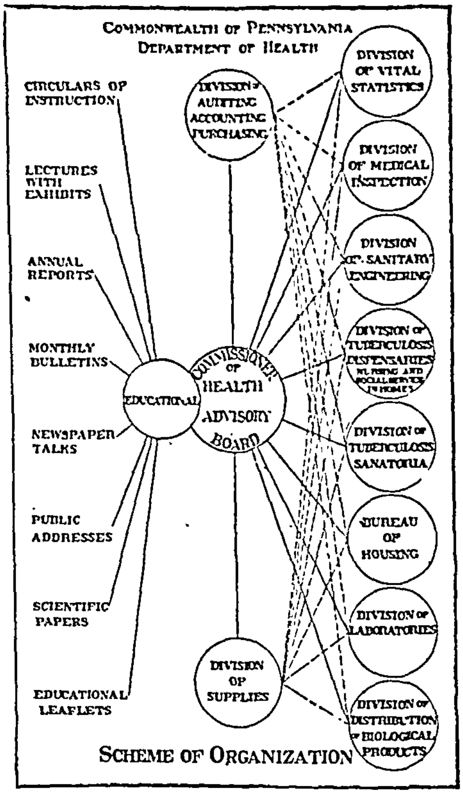
* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

communities of the state. It is from these preliminary investigations by the engineer that the executive officer determines whether the capacity of particular water works or sewerage works is sufficient for present and future needs, and whether such works are planned so as properly to safeguard the health of the public. In studies of this type the engineer has the assistance of the department's laboratory skill and scientific interpretation, in order to enable the executive officer to advise concerning the type of construction and character of the plant most likely to bring about desired purification, or pass final judgment on plans submitted.

Another important activity of the engineer in a health organization is supervision of water and sewage works already in service in order to hold responsible local officials up to the highest degree of efficiency in care and operation of the plant. Just as a chain is no stronger than its weakest link, so is the water plant or sewage plant no safer than the staff of its operators. Proper supervision may prevent disastrous results and in this supervision the engineer constantly needs the laboratory worker associated with him at his elbow.


Commonwealth of Pennsylvania
Department of Health
Circulars of Instruction
Lectures with Exhibits
Annual Reports
Monthly Bulletins
Newspaper Talks
Public Addresses
Scientific Papers
Educational Leaflets
Educational
Division of Auditing Accounting Purchasing
Commissioner of Health
Advisory Board
Division of Supplies
Division of Vital Statistics
Division of Medical Inspection
Division of Sanitary Engineering
Division of Tuberculosis Dispensaries Nursing and Social Service in Homes
Division of Tuberculosis Sanatoria
Bureau of Housing
Division of Laboratories
Division of Distribution of Biological Products
Scheme of Organization

Scheme of organization of Pennsylvania State Department of Health.

In Pennsylvania no system of water supplies or sewers and no sewage disposal plant may be constructed or extended unless the plans and specifications therefor are first submitted to the department of health and carefully studied in the field by the sanitary engineering division. The facts thus obtained are carefully reviewed by the chief engineer, who then goes over the entire situation with the commissioner that recommendations may be made to the governor and attorney general for approval.

The sanitary engineer also patrols the watersheds, and in the patrol of the watersheds, seeks out and abates all possible sources of pollution. In the general work of the medical staff conditions are discovered that require the work of the engineering division.

Coordination is the key-note of the successfully organized public health department and the sanitary engineering division is one strong arm in such an organization. Let us take, for example, the plan of organization worked out in the Commonwealth of Pennsylvania (see chart). You will note in the scheme of organization that the sanitary engineer derives his authority directly from the commissioner of health and reports directly to him; that he is relieved of the details of purchasing his supplies and doing his own bookkeeping; that he works side by side with the medical division and the other important executive divisions of the organization, any branch of which may instantly be called on for aid and cooperative work.

The Pennsylvania Department of Health in the very beginning of its organization conceived the present plan of organization and later worked it out in detail. The commissioner of health has never at any time hesitated to use the engineering division or any other division of the department for the purpose of ferreting out troubles having any bearing on public health.

The need for a sanitary engineer and a well-equipped laboratory has been recognized for many years. Not until ten years ago did Pennsylvania appreciate this necessity and in the organization of her public health forces under the laws of 1905 legal provision was made for the employment by the commissioner of health of such engineering assistance and laboratories as might be necessary to carry on the work of the department.

A division of sanitary engineering was organized. This division has increased in size until now it contains more than 100 trained employees, all giving their entire time to the sanitary details of the health work of Pennsylvania and laboring in conjunction with the medical and other forces of the department.

With a population of over eight millions (8,380,000) and a surface area of nearly 45,000 square miles, Pennsylvania has need for this engineering organization, which I believe is larger than that maintained by any other state.

The protection of the purity of the waters of the state is the fundamental work of the engineering division. This is accomplished by preventing the entrance of sewage into the streams and by the purification of water furnished to the public from polluted supplies, or else by requiring that water be obtained from uncontaminated sources.

The importance of this work is self-evident, as an adequate supply of pure water is necessary in every municipality. The urban population of our country is increasing, and with this growth comes a proportionate increase in the amount of water used by each individual. The quantity of water which can be procured from unpolluted sources is generally insufficient for the needs of our modern cities. It follows that the large surface streams will be used more and more as sources of public water supply. These streams are usually contaminated and their use would cause an increase in the occurrence of water-borne diseases, such as typhoid fever and bacillary dysentery. While it is true that polluted water can be purified, it is equally true that purification works occasionally fail in their function, and therefore cannot be considered an adequate safeguard.

The only sure remedy is to remove the cause and to restore all streams to as cleanly a condition as is practicable by the employment of modern methods of stream protection; in other words, by preventing the discharge of raw sewage into the streams.

A law passed by the general assembly in 1905, entitled "An Act to Preserve the Purity of the Waters of the State for the Protection of the Public Health," furnishes the Pennsylvania Department of Health with the necessary authority for carrying on this great work. The engineering division bases its operations on the provisions of this law.

This act prohibits the discharge of sewage by persons into any stream or other body of water in the state, and also requires all municipalities desiring to extend existing sewer systems to secure a permit therefore, issued on unanimous agreement of the governor, attorney general and commissioner of health. These permits stipulate such conditions as may be necessary to subserve the general interests of the public health. This law also forbids the construction of water works for the supply of water to the public, whether by companies or by municipal corporations, unless a written permit shall have first been obtained from the commissioner of health and under such stipulations that the supply may not be prejudicial to public health.

A great deal of study and investigation of an engineering nature is required for carrying out the provisions of this law. The permits issued by the state authorities cannot be arbitrary decisions. They must, to be of value and to carry out the intent of the law, be based on sound engineering judgment. Over 2,000 separate studies and engineering investigations have been made in connection with the administration of this law. From the organization of the department to the present time sewerage conditions have been studied in over 450 separate municipalities and townships in the state, and 940 permits granted as prescribed by law. Every one of these permits was issued after a personal investigation by officers of the department and contains such stipulations as were considered necessary to subserve the general interests of the public health. Two hundred and twenty-five modern comprehensive sewer systems for municipalities and ninety-seven sewage treatment plants have been built under these permits, and many others are about to be constructed. Seven hundred and eighty permits for water works construction have been issued controlling the supply of water to over 700 separate municipalities or townships. Field investigations and studies were also made in each case and the permits included such conditions as were necessary to protect the public.

One hundred and seventeen water filtration plants are in operation supplying purified water under permits from the department of health to municipalities having a total population of over four millions, or approximately 50 per cent. of the entire population of the state.

The department's activities do not cease after a water filtration or sewage treatment plant has been built and placed in operation. Weekly reports covering the details of daily operation of the works are regularly filed with the department of health and these reports are carefully studied by experts, and suggestions for improvements are frequently sent to the different municipalities. In addition, a force of trained engineers is constantly traveling about the state inspecting these plants at irregular intervals. These precautions are taken in order that the public may derive the benefits that can only be secured when the works are efficiently maintained. Their value has been proved many times as the department's representatives frequently find that, due to carelessness or ignorance on the part of the operators, the precautionary measures provided by the designer of the plant and approved by the state have been neglected or entirely forgotten.

The department's attention is directed to the discharge of sewage not only from public systems, but also from individual houses in the townships of the state. A large force of inspectors is engaged on a house to house inspection in the rural districts and especially on the watersheds of the streams used as a source of water supply. Nearly one half of the watershed area of the 28,000 miles of streams in Pennsylvania has been covered in these inspections. In case of pollution of state waters from an overflowing privy or cesspool, from a barnyard, or from kitchen or bath wastes, the inspection seeks to bring about an abatement of the pollution, invoking the aid of the courts, if necessary. The department's aim in this matter is not merely to secure a temporary abatement, but also to require the installation of such apparatus or the adoption of such measures as will cause a permanent abatement of the menace.

During the year 1914 alone, 104,587 properties on 371 different watersheds throughout the state were inspected. Of this number, 25,300 were in an unsatisfactory condition; 13,107 pollutions were abated on these properties during the year.

From the beginning of the work of the department to the close of the year 1914 a total of 739,437 properties had been inspected or reinspected and 117,168 abatements had been secured through efforts of officers of the department on properties scattered throughout the state. The effect of this work on communities drinking water from streams which previously had been contaminated by these pollutions must be counted as one of the factors that has reduced the general death rate and especially the typhoid fever death rate.

DEATHS FROM TYPHOID FEVER AND LIVES SAVED

1906 to 1914 inclusive

Year	Typhoid Deaths	Rate per 100,000	Calculated Deaths 1906 Rate Obtaining	Saving as Compared with 1906
1906	3,917	54.8	.....	.....
1907	3,538	48.6	3,989	451
1908	2,450	32.4	4,064	1,614
1909	1,712	22.7	4,140	2,428
1910	1,892	24.6	4,216	2,324
1911	1,716	21.9	4,291	2,575
1912	1,310	16.5	4,367	3,057
1913	1,470	18.1	4,443	2,973
1914	1,075	13.0	4,518	3,443
			Total saved	18,865

The engineering division also aids some of the state institutions of the commonwealth. Most of these have extensive water works and sewerage systems and a number of them have been designed and constructed under the supervision of the engineering division, by means of separate appropriations secured from the legislature for the work. These systems not only protect the health of the patients in the institutions and safeguard the streams below, but they have many times served as models for similar plants for villages and boroughs throughout the state.

A great reduction in the death rate from many diseases has been noticeable in Pennsylvania. The reduction in the typhoid fever death rate, one of the best guides in water purification, has been especially marked, and in the ten-year period since the state department of health was organized has resulted in the saving of thousands of lives to the state.

In 1905, when the department began its operations, Pennsylvania was a typhoid-ridden state. The purification of the water supplies and the improvement in general sanitary conditions have been factors of tremendous influence in bringing about this marvelous reduction in the number of deaths from disease so often water-borne in origin. This combining of work essentially engineering in nature with medical work brings results and proves the value and propriety of utilizing the sanitary engineer in a public health organization.

ABSTRACT OF DISCUSSION

Dr. Victor C. Vaughan, Ann Arbor, Mich.: The work that Dr. Royer has presented as done by the Commissioner of Health of Pennsylvania is a very good thing. Pennsylvania certainly needed to do this kind of work. Western Pennsylvania, as the doctor says, was a hot-bed for typhoid fever; and it was not confined to Pennsylvania but to the whole country. It was not safe for anybody to come into the region around Pittsburgh because of the possibility of getting typhoid fever. I think that many states have found it necessary to make the sanitary engineering department of the state health work very important. I know we have in Michigan. For some years we have had a very competent state sanitary engineer as an official of the State Board of Health and an engineering department; and we have the same rules, the laws that Dr. Royer has got for Pennsylvania. They say that the medical profession is the only profession that buries its mistakes — puts them out of sight. That is quite as true of the engineering profession as it is of the medical profession; and faulty engineering in this country has added greatly to the death list. It has not only added greatly to the death list, but it has increased enormously the expenditure of money. I had a letter only a few weeks ago from the editor of one of the engineering journals wanting me to write an article for that journal showing the advantage it would be to the engineering profession to have engineers examined like physicians are examined. Now understand me — wanted me to write an article showing the great value that it would be to the engineer to have state boards of examiners for engineers, just as the physicians have. I wrote him that state boards of medical examiners were not for the benefit of the medical profession; they were for the benefit of the public; and the same reason would apply to the examination of sanitary engineers. If anybody questions it, simply come to Michigan and travel around with me for a few days. I can show where bungling engineers have buried millions of dollars so that they cannot be resurrected, and at the same time have endangered the lives of, and probably killed, many people. The sanitary engineer is an important and essential adjunct to any health department. The public has the services of the United States, represented here by Dr. Rucker, as recognition of that fact. You cannot do public health work without the sanitary engineer.

Dr. B. Franklin Royer, Harrisburg, Pa.: I am glad that Dr. Vaughan reinforced in a positive way why it is absolutely necessary that engineers' plans for water works and sewage works be submitted to a central health organization for review and approval. It is not only in the interest of the health of the community, but it saves municipalities untold sums of money. Plans may often be submitted by an engineer who is a very good civil engineer but a very bad sanitary engineer, and unless the entire plans are materially changed, would be entirely unfit for the community's public health needs.

Popular Instruction Concerning Diet.—There is one kind of instruction much needed by the American people, which would illustrate better than any other the desirable preventive functions of health officers and boards of health, namely, instruction concerning diet.—Prof. Charles W. Eliot, *Public Health*, September, 1915.

INTERMEDIATE TRACHELORRHAPHY

ITS USE AS A PROPHYLACTIC AGAINST THE PERNICIOUS EFFECTS SOMETIMES CAUSED BY LACERATION OF THE CERVIX

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NEW YORK

It is not likely that any one doubts that extensive lacerations of the cervix during childbirth may do much harm, or, as lately has been shown again, by the studies of Schottlaender and Kermauner, that occasionally they may favor the causation of cancer. These authors found, in instances of cervical cancer, the presence of a laceration in the immediate vicinity in nearly every instance. Does it not then behoove us, if only as a prophylactic measure, to repair cervical tears, *and to do this before pathologic changes, incident to the trauma, manifest themselves?*

I purpose to plead for such procedure, and especially that it may be done when the sacrifice of material tissue is not a necessity. My justification lies in the fact that those who have made a careful study of the results of cervical tears almost invariably verify the assertion made by Dr. Thomas Addis Emmet concerning their deleterious effects. In support of this I call your attention first to the careful study of Brooks Wells, "The Etiological Relation of Cervical Lacerations to Uterine Disease," made from the clinical material of the late Paul F. Mundé and published in the *American Journal of Obstetrics* for 1888; and then to the paper read by Clement Cleveland before the New York Obstetrical Society, entitled "The Necessity for Early Operation upon the Lacerated Cervix," and published in the same journal for 1887. What those papers stated at that time holds good today. The analyses made by the authors cited I could multiply several times from my own practice, having, before and since then, seen thousands of lacerated cervices from which I could verify the position taken by these writers.

It is true that the resulting ills have been exaggerated by some physicians, but this applies to most matters, everything depending on the point of view. Some, indeed, have gone so far as to say that every laceration, whenever found, requires repair. I see many patients with slight tears who have been told that they must have the lacerations repaired, although they have existed a long time — too long to do an operation without denuding the torn edges by cutting away tissue — and are causing absolutely no trouble.

It is not my purpose, however, to dwell on the pernicious effects that lacerations may cause. It is conceded by those who have observed such patients, that sometimes the tears may give rise to disturbances, which are usually in relation to the extent of the injury. My purpose, rather, is again to call attention to a slight operation, to be applied in properly selected instances, whereby eventual ailments due to such injuries may be prevented.

The thesis I presented for admission to the American Gynecological Society, in 1887, was on "Intermediate Trachelorrhaphy." Under the rules of the society at that time, no papers coming before it were permitted to be published elsewhere than in the records of its activities. My thesis, therefore, appeared only in the society's transactions for 1888. Now, after so many years of added experience with intermediate trachelorrhaphy, I deem it but proper to place it before the profession at large for what it is worth.

My analysis at that time was based on 3,000 women who had borne children, in which number there were 109 who had lesions that were directly traceable to the tear. While I have not since attempted another analysis, yet from the recollection of my observations I am constrained to hold a similar view today.

From the foregoing it will be seen that I do not claim that all lacerations are productive of pathologic changes; neither do I claim that there is any time limit as to symptoms showing themselves after the injury. According to Cleveland the average time in his cases was four years and six months; but this may be shorter or longer.

Montrose A. Pallen, whose assistant I was during the early part of my professional life, held that all tears should be closed immediately after delivery; but it will be conceded that this is not practical or necessary, except in case of hemorrhage from an exceptionally extensive tear. It is far better to wait until the effect of contusion has passed off and bleeding has ceased, so that one may inspect with exactitude. Moreover, many small tears heal spontaneously post partum. After, say from four to six weeks post partum, however, the genital tract should be inspected, particularly in primiparas, because for these the operation is particularly intended, and if a tear of some extent is found, it should be repaired.

TECHNIC

My present method of repair is simpler than formerly — so simple, in fact, that any one with a little surgical ability can easily adopt it.

The patient is placed in the lithotomy position and the customary disinfection attended to. If she is not hypersensitive and not nervous, no anesthetic is required, for the operation is not very painful.

The cervix is pulled down with a pair of well-working bullet forceps, and exposed with vaginal retractors. The bullet forceps are then adjusted, one pair in the line of the cervical canal on the anterior lip, and one pair similarly applied on the posterior lip. With a narrow but very sharp scalpel — sharp especially at the point — a superficial film of tissue is scraped off the torn surface, taking particular care that the angles of the tear are made raw. For sewing I usually use a full-curved, medium-sized Martin needle, which has cutting edges; but one may use any other needle, if more accustomed to it. A No. 2 chromic catgut is passed so as to include the entire depth of the tear. Usually two sutures suffice for each side of the tear. Sometimes only one suture is required for one side, it frequently being the case, in instances of bilateral tear, that the extent of the tear on the sides are unequal in extent. This also holds good for stellate tears. Care should be exercised in tying. The surfaces should be brought together just snugly, never too tight, so that the sutures may not cut into the tissue. No after-treatment is necessary, and the patient may be about as usual after the operation.

It will be seen from the foregoing that the operation is not applicable to any case in which the tear has existed long enough to cause pathologic changes, in which scar tissue is present in the angles. In all such patients the scraping, or making the torn surfaces raw, does not suffice. That is why I say that it is particularly applicable for primiparas who have not previously sustained a tear, and that in the case of every primipara it should be part of the accoucheur's duty to make a visual inspection in about four to six weeks subsequent to delivery, and then to repair any existing laceration (unless it be of negligible extent) in the way outlined.

It is understood that in scraping the edges scrupulous care should be taken to avoid the mucosa of the cervical canal.

39 East Sixty-First Street.

A METHOD OF TESTING MUSCULAR STRENGTH IN INFANTILE PARALYSIS *

E. G. MARTIN, Ph.D.
AND
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BOSTON

The determination of the strength of partly paralyzed muscles in infantile paralysis, if made at all, has been done in the past by the roughest sort of guess, most often by pressing the hand against the contracting muscle. It was suggested to the physiological department of Harvard University in the winter of 1914-1915 that a more accurate means of estimating muscular strength would be of great value, and the method here described was formulated, with the following aims:

1. To enable a more accurate diagnosis to be made in the way of picking out the seriously affected muscles after an attack.
2. To obtain a means of indicating the muscles which were most promising for mechanical or operative treatment.
3. A quantitative measurement of this sort which would give a means of gaging the effectiveness of different modes of treatment.
4. A method of this kind might enable one to pick out from supposedly abortive cases certain cases in which remained a residual muscular paralysis too slight to be perceived by other methods.

To be of service the technic should be relatively simple and the results reliable. The method, which has been developed and used in a large series of tests extending over six months, seems to satisfy both these criteria to a reasonable degree.

The index of muscular power employed is the resistance of the muscle group to a steady pull sufficient to overcome it. A sling is adjusted in an assigned position over the part of the limb in which the muscle group to be tested has its insertion. The sling is fastened to an accurate spring balance through which the pull is exerted. The balance must be held carefully in a line at right angle to the axis of the part of the limb to which the sling is adjusted, and is read either at the instant the muscle yields, as in the test of plantar flexion, or when the member is drawn into an assigned relationship with the body, as in knee extension.

A standard technic has been worked out for each of the following movements: In the legs, plantar and dorsal flexion, inversion and eversion of foot; adduc-

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* From the Department of Physiology of the Harvard Medical School and the Orthopedic Department of the Children's Hospital, Boston. The preliminary report to the State Board of Health of Vermont of an investigation conducted under their auspices.

* The funds for the pursuit of this inquiry were furnished by an interested citizen of Vermont.

tion and abduction, flexion and extension of the hip; flexion and extension of the knee. In the arms, pectoral, latissimus dorsi, anterior and posterior deltoids; forearm flexion and extension; thumb adduction and abduction. These include the important groups except the trunk muscles and the rotators, which are mechanically difficult to test reliably. The tests in detail will be described in a subsequent communication.

To be able to judge fairly the degree of impairment of an affected muscle group one must know what should be expected of the same group when normal. To this end we have prepared, on the basis of tests of a large series of normal children, tables of standard muscle strengths for all the groups listed above, for ages from 4 to 16 years. These tables give information not only of the normal strength of each group of muscles, but also of the relative strengths of the different groups.

To judge, on the basis of repeated tests, whether an affected muscle has improved or deteriorated, allowance must be made for possible variations in the vigor of voluntary innervation. To obtain data for this allowance we test regularly all the leg groups of both sides in cases that have any leg muscles affected, and all the arm groups when there is impairment of the arm.

Such changes of power as are shown by the *unaffected* muscles after a short interval are not referable to changes in muscular condition, but must signify changes in innervation. We can conclude, from the records of the unaffected muscles, what allowance to make for changes in innervation, and so determine how much of the change shown by the affected muscle is actual increase or loss of muscular power.

In favor of the method it may be said that successive tests at short intervals on the same subjects show the readings as to individual muscle groups to be, in a large percentage of cases, remarkably constant.

234 Marlborough Street.—Harvard Medical School.

SUDDEN BLINDNESS DUE TO SUPPURATION OF THE ACCESSORY NASAL SINUSES

WITH REPORT OF THREE CASES *

H. H. STARK, M.D.
EL PASO, TEXAS

That the intimate anatomic relations existing between the nasal accessory sinuses and the orbital contents has caused much eye complication has long been well known, but it is only within the last few years that special attention has been given this subject, as is shown by the literature on the subject.

In the last three years I have had in my practice three cases of sudden monocular blindness, which were diagnosed as due to nasal suppuration, and cured by endonasal treatment. These cases were of such a nature that diagnosis was not easy, one case being diagnosed by the presence of central color scotoma for red and green; one by dilated pupil, and one by dilated pupil, color scotoma and involvement of the ocular muscle. These cases led me to investigate the ophthalmic literature, to see if by tabulating the symptoms of all cases reported there would not be found some more definite way of diagnosing the eye condition and locating the nasal trouble. I have collected from the literature 88 cases of sudden blindness from nasal disease, most of them with normal fundus (those that were not normal having only optic neuritis, with the exception of two which had a neuroretinitis), leaving out the cases that were complicated by a history of syphilis, tuberculosis, detached retina, uveitis, and including only two having orbital abscess. This confines the cases to that form which we recognize as retrobulbar neuritis. In 69 of these cases one eye, in 19 both eyes were affected. Of the 88 cases, 16 are from the English literature, 14 from the French, and 58 from the German, and date from 1839 to the present time. The French seem to have reported more in the early literature, but of late years the German reports have predominated. Of the total, 63 cases have been reported in the last ten years. In order that my own cases may be commented on under the separate heading of "Symptoms," I herewith give their history:

Case 1.—H. O. J., aged 35, came under my care Feb. 11, 1911, with the following history: In November, 1910, while he was standing on a steel cable attached to an engine, the engine started, throwing him in the air and causing him to alight on a steel rail on the right side of his head, cutting his ear in the median line and causing a fracture of the base of the skull with the usual accompanying symptoms of hemorrhage from the ear, etc. He was trephined within forty-eight hours and a blood clot removed; he remained unconscious for several days. After regaining consciousness, it was noticed that he had a paralysis of the right externus muscle, causing diplopia, due, undoubtedly, to involvement of the sixth nerve of that side. When referred to me, one month after the injury, examination showed that he had a normal vision in each eye, but up to that time had developed no movement of the right externus muscle. He was placed on increasing doses of strychnin, and his right eye covered with ground glass, to relieve him of the troublesome diplopia. He was under treatment for three months, with slight improvement, when he was referred to me again, May 2, with a history of the vision in the left eye suddenly becoming obscure April 28. He was able to read in the morning, but in the afternoon could only see objects indistinctly, the vision gradually growing worse up to the time I examined him, when the vision in his left eye was 21/100, vision in the right eye being normal. Examination of the left eye showed the pupil regularly reacting to light and accommodation; no fundus change was found, except a possible engorgement of the retinal vessels; peripheral field of vision, normal for white, but an absolute color scotoma for red and green; no sign of exophthalmos or orbital involvement; urine negative; no syphilitic history. At this time he gave no history of nasal trouble, and nothing was found on examination. Thinking there might be some syphilitic trouble, he was sent home and placed on increasing doses of potassium iodid. He returned to me on the twenty-second, vision having decreased to counting fingers at a few feet. The pupils were still normal in reaction; central color scotoma was still present, and no sign appeared of orbital involvement. Examination of the nose at this time showed pus coming from under the middle turbinate on the left side. Probing disclosed no uncovered bone; no involvement of the frontal or maxillary sinus could be found. The sphenoid was not probed, but there was no pus coming from this region. Diagnosis was made of retrobulbar neuritis, due to empyema of the ethmoid cells. In order to drain them, the usual preliminary operation of removing the anterior end of the middle turbinate was done, and he was placed on 5 grains of hexamethylenamin three times a day. There was an increased discharge of pus, and in five days his vision went up to 20/20; the color scotoma was still present; there was no marked decrease

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[*] Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

In the cases of optic neuritis the seat of the trouble was:

Maxillary sinus	3
Maxillary and ethmoid	1
Maxillary, ethmoid and sphenoid	2
Ethmoid	18
Ethmoid and sphenoid	8
Sphenoid	8

Of the 52 cases, the ethmoid was involved in 33, showing the preponderance strongly in favor of the ethmoid cells in this trouble.

Of the choked disk cases, 1 was from maxillary sinus, ethmoid and sphenoid trouble, this being Halstead's[1] patient, in whom the left eye was blind from a right-sided suppuration; 1 other was Dubois'[2] patient, the posterior ethmoid being the seat of the trouble; location in the other 3 not being given.

It would be natural to think that the posterior cell would cause more pressure on the nerve by the closer proximity to it and the more confined area of the orbit in this location. Halstead's order of operation and results were as follows: Removal of the anterior end of the middle turbinate, entrance of the posterior ethmoid cells and sphenoid cavity. The condition began to improve, and in a week from that time the patient could count fingers held directly in front of her. Two weeks from the first operation, removal of the remaining part of the middle turbinate, probing and syringing the sphenoid was done, followed by slow improvement in sight. Three weeks later, the antrum, which was filled with pus, was opened and cleaned. Improvement continued after this until, five and a half months after operation, vision was 6/18. He ascribed the blindness and swelling of the optic disk to pressure from the sphenoid.

Fish[3] says that among 36 cases of optic neuritis found in the literature, 26 cases were of diseases of the nasal accessory sinuses. He, therefore, maintained that this etiologic factor should be credited with greater importance than is usually accredited it.

The direct nasal relationship was shown in 15 cases by improvement in the ocular condition following drainage; the 11 remaining cases were attributed to the same cause, although the connection could not be demonstrated by ocular improvement, as most of the cases presented more or less optic atrophy, while in others the treatment as advised was not undergone. In this paper he reports a case of optic neuritis from growth, as have others. Elschnig,[4] in discussing the significance of accessory nasal disease in the pathology of the eye, says that these cases represent about 15 per cent. of all optic nerve affections.

In the 43 cases of optic neuritis here tabulated, 38 patients improved with nasal treatment, showing this certainly to have been the causative factor in the large majority. From the analyses of these cases, we can safely say that blindness due to nasal sinus empyema, in addition to the retrobulbar neuritis, does, in about 50 per cent. of the cases, advance to such a stage as to cause an optic neuritis, and in a small percentage of cases goes on even to a choked disk; that all of these conditions are due possibly to the same cause, one being but an advanced stage of the other, and dependent to a certain degree on the location of the nasal involvement. None of my patients had an optic neuritis, but I ascribed this to the fact that they either had partial drainage from the affected sinus, or that they were seen early enough to prevent its formation.

PUPILLARY CONDITIONS

The condition of the pupil was one of the earliest signs of the eye involvement from the nasal accessory sinuses, Beer,[5] in 1817, giving the following classification: "Vicarious Amaurosis of Suppurating Coryza Without a Demonstrable Accumulation of Mucus in the Frontal Sinus." He says the pupil in this form of amaurosis is greatly dilated without losing its clearness, the iris is immovable and its pupillary margin is not regularly rounded, but angular. Under the heading of "Vicarious Amaurosis of Suppressed Coryza with Accumulation of Mucus and Pus in the Frontal Sinuses," he says:

> After the sudden suppression of severe coryza, the patient begins to suffer from pain limited to the root of the nose and the frontal sinus region, accompanied at the same time by a very considerable amaurotic amblyopia, affecting either one eye or both eyes together, and associated with various light phenomena, and a narrowed, perfectly round, but very pale black pupil, entire immobility of the iris and diplopia.

Others of the early writers reported dilated pupil, but this point seems to have been neglected in our later text-books. Recently Elschnig[4] has called attention to it as one of the symptoms in this type of amblyopia. In the cases investigated, the pupil of the affected eye was dilated in 18, or about 20 per cent., contracted in 4. In the patients with dilated pupils the sinuses affected were the following:

Maxillary sinus and ethmoid	1
Maxillary, ethmoid and sphenoid	1
Ethmoid	9
Ethmoid and sphenoid	2
Sphenoid	1
Not located	4

In patients with contracted pupils:

Ethmoid and sphenoid	1
Ethmoid	3

The cause of this symptom has seldom been commented on by the authors.

Trousseau[6] says, in discussing reflex ocular disturbance of nasal origin: "I have seen the disappearance of an apparently inexplicable unilateral mydriasis following upon the cauterizing of ulcers in the nose." He points out that there exists a true asthenopia of nasal origin, which yields only to the treatment of the nasal pituitary. While we are unable to say exactly, this cure may have been caused by a shrinking of the membranes, allowing pus to be discharged from one of the sinuses. This is the only paper assigning a cause for the dilatation. In my two cases, I thought it was a symptom of diagnostic value, pointing to the location of the pus in the anterior cells with pressure on either a ciliary ganglion or short ciliary nerve, but Halstead's case,[1] in which the dilatation came no doubt from the opposite sphenoid, and Gutmann's[7] case, in which he ascribed the trouble to the opposite antrum, make it look doubtful, although the latter patient had acute catarrh on the side of the affected eye, and there may have been an involvement of the nose on this side as well. But that the cause is not due to blindness alone is certainly true, or all cases would have a dilated pupil. That it is not due solely to the pus is true, for Richet[8] reports a case of dilatation caused by mucocele, while Varese[9] reports a case due to sarcoma of the superior maxillary sinus. However, this patient had involvement of the sinuses and improved after the ethmoids were drained.

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[1] Halstead: Empyema of the Right Maxillary, Ethmoidal and Sphenoidal Sinuses, with Sudden Blindness of the Left Eye; Operation; Recovery of Sight, Tr. Am. Laryngol., Rhinol. and Otol. Soc., New York, May, 1901, p. 61.

[2] Dubois: Rhinogene eenzijdige Papillitis, Nederlandsch. Tijdschr. v. Geneesk., 1912, i, 336.

[3] Fish: A Study of Optic Neuritis in Connection with Nasal Accessory Sinus Disease, Brit. Med. Jour., Nov. 2, 1907, p. 1218.

[4] Elschnig: Die Bedeutung der Nasennebenhöhlen-Affektionen in the Pathologie des Auges, Internat. Centralbl. f. Ohrenh., 1914, xii, 487.

[5] Beer: Vicarious Amaurosis of Suppressed Coryza without a Demonstrable Accumulation of Mucus in the Frontal Sinuses, Lehre von den Augenkrankheiten, Vienna, 1817, ii, 530.

[6] Trousseau: Troubles oculaires réflexes d'origine nasale, Bull. Méd, Paris, 1889, iii, 506.

Roemer,[10] in discussing absolute immobility of the pupil, says the lesion may be situated in the sphincter, in the short ciliary nerve, in the ciliary ganglion, in the motor root of the ganglion, in the trunk of the oculomotor nerve, or in the ganglion cells of the sphincter. If the lesion is situated posterior to the ciliary ganglion, physostigmin (eserin) will continue to act. If in front of it, the effect of the drug will be lessened.

Four cases of contracted pupil are reported. Hoffmann[11] reports a case in which there was supra-orbital pain, and ascribes the condition to involvement of the surpraorbital nerve and involvement of the oculomotor fibers supplying the sphincter pupillae, this case having exophthalmos. Von Eicken[12] reports a case, but ascribes no cause; this patient had diplopia and slight exophthalmos; it was due to suppuration of the ethmoid cells. Knapp[13] reported an interesting case with contracted pupil, irresponsive to light with no light perception in the eye, and a distinct optic neuritis, which improved after removing the anterior end of the middle turbinate. One week later the pupil reacted to light, but instantly dilated again; the pupil was normal on the twenty-third day after operation.

EXOPHTHALMOS

Exophthalmos was mentioned as a symptom 17 times, with the following sinuses involved:

Maxillary sinus	4
Frontal and ethmoid	1
Ethmoid	7
Ethmoid and sphenoid	1
Sphenoid	1
Not located	3

This should point to this symptom as coming more frequently from the antrum and ethmoid, possibly because of their having a larger surface given to making up the bony wall of the orbit. Elschnig[4] says in unilateral infections, one half of the cases present a slight exophthalmos, measurable by means of Hertl's ophthalmometer. This close observation by Elschnig makes it seem as though exophthalmos had been present in many cases and not diagnosed by observation. In Gutmann's[7] case, all the conditions were ascribed to the antrum on the opposite side, but, as noted under "Pupillary Conditions," there was an acute catarrh on the affected side, which might have been a sinus involvement. Sommer, in discussing Meyer's[14] case, reported a case in which there was exophthalmos, which was ascribed to frontal and ethmoid involvement, and which at postmortem examination showed advanced caries of the sphenoid bone with normal sphenoid cavity.

The external muscles were involved in 11 cases, as follows:

Maxillary sinus	3
Maxillary and sphenoid	1
Ethmoid	4
Ethmoid and sphenoid	2
Sphenoid	1

showing, as in exophthalmos, the predominating influence of the antrum and ethmoid.

RESTRICTION OF VISUAL FIELD

Berger[15] says, in 1887: "I was the first to observe a narrowing of the visual field following upon disease of the nasal fossa. A short time after my communication, analogous observations were published by Zeim, Killam, Hamilton and others." Eighty-two of the total number of cases were published after Berger reported restriction of the peripheral field as one of the symptoms, but only three cases of restriction could be found. Birch-Hirschfeld[16] claims that the restriction is of later date than the central scotoma, and emphasized the fact that central scotoma, first relative, then absolute, is the first symptom. Van der Hoeve[17] and others emphasize the point that the first symptom is the enlargement of the blind spot for color, believing this to occur exclusively in involvement of the posterior accessory sinuses.

The three restricted fields were: Maxillary sinus 1, ethmoid 1, and frontal 1; all of them being cases of long standing, which strengthened Birch-Hirschfeld's assertion that restriction comes later.

SCOTOMA

There were fourteen cases in which scotoma was mentioned, but all of them were not confined to the central field. They are divided as follows:

Maxillary sinus	1
Maxillary, ethmoid and sphenoid	1
Frontal and sphenoid	1
Ethmoid	10
Sphenoid	1

Snellen[18] reports a case of the right eye being blind, left eye with visual acuity of 6/60; temporal hemianopsia cured by opening the sphenoid. Onodi[19] reports a case of suppuration of the posterior ethmoid cells and of the sphenoid sinus, associated with optic atrophy of long standing on the right side, with optic neuritis and temporal hemianopsia on the left side;

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[7] Gutmann: Erkrankungen des Auges in ihren Bezichungen zu den Nasen-Nebenhöhlen Empyemen, Ztschr. f. Augenh., 1906, xv, 403.

[8] Richet: Thèse de Sautereau, p. 68. Quoted by Kuhnt: Ueber die entzindlichen Krankheiten der Iternhóle, 1895, p. 106. Hopjik: Entzündliche Erkrankungen der Nebenhölen der Nase, 1915.

[9] Varese: Malattie dei seni della Faccia, Arch. di ottal., 1895, iii, 96.

[10] Roemer: Text-Book of Ophthalmology, New York, Rebman Company, 1913, p. 580.

[11] Hoffmann: Entzündliche Affektionen in der Orbita und am Auge, Ztschr. f. Augenh., 1906, xvi, 1.

[12] Von Eicken: Komplikationen bei Erkrankungen der Nasen-Nebenhöhlen, Tr. German Laryngol. Soc., 1908, p. 17.

[13] Knapp: Bilateral Optic Neuritis after Ethmoiditis, Tr. Am. Ophth. Soc., 1908, xi, Part 3, p. 681.

[14] Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonderes der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.

[15] Berger: Rapports des maladies des veines avec celles du nez et de ses cavités voisines, Bull. Soc. de méd. prat. de Paris, Jan. 15, 1892, p. 35.

[16] Birch-Hirschfeld: Beitrag zur Kenntniss der Sehnerven Erkrankungen bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch f. Ophth., 1906, lxv, 440.

[17] Van der Hoeve: Sehnerven-Erkrankung bei Erkrankung der hinteren Nebenhöhlen der Nase, Arch. f. Augenh., 1909, lxiv, 18; ibid., 1910, lxvii, 101.

[18] Snellen: Beziehungen zwischen Erkrankungen des Sehnerven und der hinteren Nasen-Nebenhöhlen, Internat. Centralbl. f. Laryngol. u. Rhinol., 1909, xxv, 491. (Utrecht Medical Meeting, April, 1909.)

[19] Onodi: The Optic Nerve and the Accessory Sinuses of the Nose, Lückhoff's Auth. Trans., New York, William Wood & Co., 1910, p. 93.

the left eye improved slightly after operation. He points out that the posterior ethmoid cells are not infrequently closely related to the optic canal, the bony wall being very thin in all these cases. Gutmann[20] reports one case of right-sided central scotoma, with temporal narrowing of the field, which result he ascribes to the action of toxins arising from empyema of the ethmoid cells. His patient was operated on with subsequent loss of vision. Van Gilse[21] reports a case in which the patient in the course of a coryza underwent a loss of vision in the right eye with pain, right-sided headache and slight swelling, slight peripheral restriction of the visual field, central scotoma for white and color, enlargement of the blind spot for color, and an absolute annular scotoma. Removal of the middle turbinate was followed by a narrowing of the scotoma; opening the posterior ethmoid cells had no influence on the eye symptoms; incision of the sphenoid one week later gave no improvement of the eye. When the frontal sinus and anterior ethmoid cells were opened three weeks later, the frontal sinus was found to be healthy; one ethmoid cell was filled with mucopus. On the day following operation, the exophthalmos had practically disappeared, as also the annular scotoma. This is one of the cases clearly demonstrating the fact that many sinuses may be involved without being entirely responsible for the condition of the eye; the symptoms in this case showing no marked improvement until after a solitary anterior ethmoid cell was opened.

W. L. Meyer[22] reports a case of bilateral central scotoma, in which he opened the right and left ethmoid cells, on account of the profuse nasal secretion, with no definite pathologic findings; vision first improved, then became slightly aggravated on the right side.

In considering this symptom, we are led to believe that the field for white and color is very frequently markedly significant, pointing to more definite location of the nasal trouble; bitemporal hemianopsia naturally pointing to a sphenoid involvement. The field could be easily explained if we considered the symptom to be due solely to pressure, as the anatomic structure of the different orbits might be such that pressure was not equally applied, thus causing a restriction of the nerve at different points. Many investigators have shown that the sphenoid cavity is of such irregular shape and location that it could cause, in addition to a temporal, a bitemporal hemianopsia. It would be natural that a sphenoid cavity could be so placed that it would cause a temporal or bitemporal hemianopsia.

CENTRAL SCOTOMA

The most definite sign, and one on which most reliance can be placed, is that of central scotoma, the process, no doubt, being the formation of the central scotoma which, in time with the increased pressure, causes a restriction of the field. Central scotoma was reported in twelve cases, it being the only symptom in one case reported by Fuchs,[23] which was due to involvement of the ethmoid and sphenoid. However, Panse[24] reports a patient with left-side amblyopia, with light perception, who had been unable to see for eight days; the left pupil was larger than the right, sluggish in its reaction, optic papilla and retina slightly blurred; the middle turbinate was removed with slight improvement as a result. In this case a central color scotoma was never demonstrated; a Wassermann was positive, but, in spite of the syphilitic base, a nasal operation induced a temporary improvement.

Jessop[25] reports a case of a small color scotoma for red, associated with exophthalmos, in which he found an endothelioma on the greater wing of the sphenoid.

ENLARGEMENT OF THE BLIND SPOT

Enlargement of the blind spot has been so recently brought to our notice that sufficient data have not yet been accumulated from which to judge its value. In addition to Van der Hoeve's claim, de Kleyn[26] looked for this symptom in a large number of nose cases in his clinic, in diseases of the nose and the anterior sinuses, but found a normal blind spot for white and color. Whereas, in fifty-two cases of disease of the postnasal accessory sinuses, an enlargement of the blind spot for white or color was noted in forty-six cases of extensive posterior ethmoiditis or sphenoiditis, in all cases the eye symptoms were much improved, the majority entirely cured by nasal treatment. Van Gilse[21] in his case reports it. Dubois[2] failed to find it in a case of left-sided papillitis with negative nasal findings. Panse[24] reports a case of bilateral disturbance of vision, in which the optic papillae were congested; the visual field showed enlargement of the blind spot; no unusual findings in the nose, but the middle turbinate was removed and the ethmoids exposed. Three weeks later vision was improved to 5/6 and 5/8, optic disk normal. Recently Onodi[27] has given statistics on 100 cases from his clinic in Budapest. Among 70 accessory sinus empyemas, ocular changes were present in 47 cases; negative findings in 23; central scotoma was present 6 times, 3 times bilateral; 1 combined with an enlargement of the blind spot, and 2 with optic neuritis; enlargement of the unilateral scotoma occurred in 3 cases of empyema of the maxillary sinus and the ethmoid cells, bilateral scotoma in a case of empyema of the ethmoid cells, the sphenoid sinus and frontal sinus, respectively. Enlargement of the blind spot was present 38 times; 28 times alone, and 6 times associated with central color scotoma. Narrowing of the visual field occurred once. In bilateral empyema, the blind spot was enlarged, but only on one side in part of the cases. In unilateral empyema, enlargement of the blind spot was noted 11 times on the same side, and 7 times on the contralateral side.

Marbreiter[28] reports 100 cases of empyema examined in two years in the nose and throat clinics of Strassburg. When possible, the examination was made before and after the operation. Enlargement was always more frequent for color than for white. Her cases do not agree with those of Van der Hoeve and de Kleyn, who consider the presence of enlargement of the blind spot indicative of empyema of the posterior sinuses. She found it many times in diseases of the anterior sinuses. This symptom, unquestionably, has great possibilities as a diagnostic point, which will be shown by further investigation.

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[20] Gutmann: Augensymptome bei Erkrankungen der Nasen-Nebenhöhlen, Centralbl. f. Augenh., 1910, xxxiv, 103.

[21] Van Gilse: Ein Fall von Entzundung der Nassennebenhöhlen mit Neuritis retrobulbaris, Internat. Centralbl. f. Laryngol. u. Rhinol., 1911, xxvii, 601.

[22] Meyer: Ueber die ophthalmologische Diagnostik der Erkrankungen der Nasennebenhöhlen, besonders der hinteren, München. med. Wchnschr., 1912, No. 52, p. 2888.

[23] Fuchs: Case of Eye Disturbance in Accessory Sinus Disease, Lehrbuch der Augenh., 1905, Ed. 10, p. 766.

[24] Panse: Die Heilung retrobulbären Erblindung durch Nasen Operationen, München. med. Wchnschr., 1912, No. 52, p. 2887.

[25] Jessop: Two Cases of Proptosis Associated with Diseases of Ethmoid and Sphenoid Respectively, Tr. Ophth. Soc., 1903, xxiii.

[26] De Kleyn: Affections of the Accessory Sinuses, and That It is the First Symptom Which Appears in the Eye, Arch. f. Ophth., 1910, lxxv, 513.

[27] Onodi: Ueber die [illegible] nasalen Ursprunges, Pest. med.-chir. P [illegible]

[28] Marbreiter: Ztschr. f. A [illegible]

Recently Loeb[29] has reported a case of scintillating scotoma, cured by operation on the ethmoid sinus.

CAUSE

Hajek[30] recently said that the teaching of a common rhinologic origin for retrobulbar neuritis did not rest on a solid basis so far as actual proof is concerned. He has repeatedly obtained temporary improvement after opening the ethmoid labyrinth, without pathologic findings, but he has also frequently had no success at all. In some of the cases, assumed to be those of rhinologic origin, in which he had decided to operate, spontaneous cure occurred in the course of time. Other patients who were operated on became totally blind after a transitory improvement.

Baumgarten[31] reports a case in which the patient suddenly became blind in the right eye with normal ophthalmic findings, in which, on removal of the middle turbinate and opening the sphenoid, he found nothing but thickened mucosa. In the same paper he reported a case in which the patient had loss of sight in one eye within three days. Four months later pressure atrophy of the optic nerve was seen; removal of the ethmoid bulla and incision of the anterior sphenoid wall showed only thickened mucosa. Subsequently more posterior cells were exposed, with improvement of vision. The thickened mucosa in this case shows that there must have been some inflammation existing. It is extremely doubtful on opening a cavity of this character, with the amount of blood occurring during an operation, that one can always tell the presence of a small amount of pus, and a small amount is all that is necessary to do mischief.

De Schweinitz,[32] speaking of edema of the lids from maxillary sinus disease, says that if the disease is of long standing, it assumes a positively brawny consistency, showing, no doubt, a cell proliferation. He quotes Dr. Walter Williams in saying that he has seen edema of the lids when only a few drops of pus have been in the cavity of the antrum.

Various theories have been expressed as to the cause of this form of amblyopia—pressure, circulatory disturbance and toxemia. That pus alone is not responsible for the condition is shown by Hajek and Baumgarten's report, and that the same condition of the eye may be caused by a noninfectious growth is illustrated in articles previously quoted in this paper. The one theory that seems to fit all cases is that of pressure. This pressure may be of two kinds, gradual and sudden; sudden pressure, which I believe is illustrated in my three cases, is no doubt due to the sudden rupture of the bony wall separating the sinus and the orbit without rupture of the periosteum, thus bringing immediately direct pressure on the orbit and its contents, causing disturbance of the functions of the nerves and interference with the circulation. The gradual pressure is, no doubt, due to the inflammatory condition, suppurative or nonsuppurative, being transmitted from the sinus to the orbit with or without infection, possibly enlargement of the vessels with cell proliferation. It is doubtful whether the toxins are directly responsible for the central scotoma, but they no doubt play an important part in producing a low-grade cellulitis. This theory is borne out by de Kleyn and Gerlach's[33] postmortem study of a case of empyema of the maxillary sinus with erythema, intense conjunctiva and edema of the lids, in which they described a circumscribed infiltration just opposite the sphenoid sinus, and continuation of the infiltration toward the septum along a vein, an interstitial optic neuritis with numerous vacuoles in the optic nerve.

I believe we can safely say that all the symptoms enumerated can be ascribed to the same cause, one being simply a different degree of the other, the primary stage being a slight involvement, the maximum stage represented sometimes by orbital abscess or direct infection. Other cases in which there is no orbital infection and a loss of vision coming on after slight improvement, to my mind show the shrinking which takes place after the cause is removed, which shrinking causes constriction of the optic nerve. If we accept this theory, it not only explains this condition, but explains many cases of muscular asthenopia, and possibly, many cases in patients who have defective central vision, which has been ascribed to amblyopia ex anopsia.

ABSTRACT OF DISCUSSION

Dr. James W. Dunn, Cairo, Ill.: Oculists have long been intimately acquainted with the important rôle affections of the frontal and maxillary sinuses play in the production of disturbances of vision. This is not surprising when we recall the comparative ease with which diseases of these cavities are diagnosed and the more or less prominent symptoms such as displacement of the eyeball and interference with its motility associated with pathologic conditions here that have broken over into the orbit. Not until recently, however, have we endeavored to learn fully the part affections of the ethmoid cells and the sphenoidal sinuses play in producing visual disturbances. Investigation has now taught us that a few bilateral and many unilateral cases of obscure interference with vision are dependent on diseases of these latter cavities.

The relations existing between the optic nerve and the posterior ethmoid cells, the sphenoidal sinus and the posterior part of the frontal sinus are not constant. Usually the sphenoidal sinus bears the most intimate relation to this nerve, but at times the latter may be almost completely surrounded by a hyperdeveloped ethmoid cell. Again, the intimate relation existing between the optic nerve and the sphenoid sinus and ethmoid cells on account of the thinness of the bony plate intervening in normal conditions may be made more intimate by the failure of complete development of this partition. Thus the liability of the nerve to injury from pressure in all cases of disease in these cavities is increased occasionally by congenital dehiscences. Thus also is the nerve made liable to direct involvement through continuity of tissue. Unilateral central scotoma, enlargement of the blind spot and postoptic neuritis are significant of disease of the posterior ethmoid cells and sphenoid sinuses. This is particularly true if there are no indications of central brain lesion, no external ocular manifestations, and no ophthalmoscopic evidences in the case.

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[29] Loeb: The Influence of the Nose on Eye Affections as Evidenced by a Case of Bilateral Blindness and One of Unilateral Scintillating Scotoma Cured by Operations on the Ethmoid Cells, Tr. Am. Laryngol. Assn., May, 1914, p. 157.

[30] Hajek: Affektionen der Netzhaut und des Sehnerven, Pathologie und Therapie der entzundlichen Erkrankungen der Nebenhöhlen der Nase, 1915, p. 422.

[31] Baumgarten: Sehstörungen durch Affektionen der Nase bedingt, Monatschr. f. Ohrenh., 1910, xliv, 1053.

[32] De Schweinitz: Diseases of the Eye, Ed. 7, p. 788.

[33] De Kleyn and Gerlach: Arch f. Ophth., lxxxiv, 164. Ophthalmic Year Book, 1913, x.

All the cases reported by the essayist are visual disturbances from empyema of the ethmoid cells. That the seat of trouble was in the posterior cells in Case 2 is patent from the report. This is not so evident from the reports on the other two cases. When, however, we recall the slight interference with motility and the absence of displacement of the eyeball in these cases we are justified in concluding that these were similar to Case 2. Indeed, it seems probable that Dr. Stark would have found more conclusive evidence in his examinations than he did had it not been that these were the cells causing the eye complications. My conviction is that, generally speaking, those cases of interference with vision from diseases in the frontal and maxillary sinuses are easy of diagnosis, but the really puzzling ones are those from affections of the sphenoid sinus and posterior ethmoid cells.

Of the fifty-two cases of involvement of the optic nerve collected by the essayist, in forty-two the seat of the trouble was either the ethmoid cells or sphenoid sinuses, or both. This is in accordance with what we would suppose from the anatomic facts brought out.

Dr. Otis Orendorff, Canon City, Colo.: The case I wish to report is of especial interest for the reason that it is complicated with neurasthenia and dental disturbance. I was wrestling with the case just at the time I received a copy of the paper by Dr. Stark. May 11, 1915, Mrs. H. C., aged 27, housewife, mother of three healthy children, always enjoyed reasonably good health, but for several years was subject to numbness in left side which her physician attributed to hysteroneurasthenia; had slight pyorrhea; subject to headache for years, aggravated by stooping, etc., as well as on fixation; no history of catarrh or throat trouble, but a slight mucous discharge and sneezing for one month. This would not be of diagnostic importance for the reason that it occurred in the hay-fever season. Vision failed suddenly in the right eye the day before the consultation. The pupils were both slightly dilated and sluggish; right worse; right eye turned out and up occasionally and patient complained of diffuse haziness and deep tenderness, and at times there was slight injection. The ophthalmoscope showed in the right eye possibly slight haziness but a normal fundus could be distinctly made out: the left a little retinal hyperemia. Refraction: Right .1/10 not improved. Left, $8/10-^{1} + .50 = 8/10-^{1}$, May 13, 1915, refraction and examination under homatropin with the same result. She was advised to consult a dentist, who reported the upper wisdom teeth unerupted and severe pyorrhea of the first lower right molar, this tooth being very loose, but there was no tenderness or indication of retained pus about the teeth. May 15, pain on movement and deep pressure in right eyeball. Right vision reduced to fingers at 6 feet. Ophthalmoscope still negative; pupil more dilated and practically no reaction. Although the nose had appeared normal, cocain and epinephrin were now applied, which revealed a little bulging in the right ethmoid and an enlarged middle turbinate pressing on the lateral wall of the left cavity. However, these conditions were not so marked as in other noses in which they give no trouble whatever. There was a small drop of pus very high in the right cavity. Suction and posture brought no more. There was not sufficient vision in the right eye to take the fields, but in the left eye they were normal.

A competent internist reported positively that there was no general condition that would account for this woman's trouble and insisted that the disease was hysteria. I now made a tentative diagnosis, acute retrobulbar neuritis secondary to an acute ethmoiditis, and promptly opened up the anterior ethmoid and found plenty of pus in the upper portion, but none in the lower cells. For some reason there was a serious hemorrhage. Recovery was uneventful. Examination, May 18, showed R.V. 1/10; May 20, R.V. 3/10; May 24, R.V. 5/10; June 8, R.V. $8/10-^{1}$, L.V. 8/10. Incidentally the right third molar was appearing. Fundi normal. The patient noticed that clearing begins at the upper part of the field. While the rôle that the teeth are playing in this case is uncertain, there can be no doubt that the chief etiologic factor can be found in the ethmoid sinus.

Dr. Hans Barkan, San Francisco: I have seen some cases which simulate these, one this year and five or six before that, which are of special interest. The first was a case of sudden blindness in a young person; such cases occur most frequently in young people. They proved to be in all multiple sclerosis. This condition should always be borne in mind in seeing a one-sided blindness or occasional bilateral, complete and acute in its onset, with or without some involvement of the nerve. We do not need the usual classical triad, namely, scanning speech, tremor and nystagmus, any more to diagnose multiple sclerosis. A missing patellar reflex, a one-sided corneal anesthesia or absent abdominal reflexes, for instance, are enough to be at least suspicious, especially when combined with an acute retrobulbar neuritis. Three of the cases I have seen have been accompanied by considerable headache; practically all of them have cleared up in four or five days from blindness to practically normal vision by rest and sweating. It is of particular interest to me that some of these patient came saying that they had had these attacks once or twice before, but that vision had returned in a few days and they had not bothered to see an ophthalmologist. Since hearing Dr. Stark's very interesting paper I have felt still stronger about this question of mapping out the blind spot. I consider it of practically no value unless done by Bjerrum's method. There are certain points to be observed in taking it. The patient will give a somewhat smaller blind spot when the object is led from within the blind spot outward than if from the periphery toward the blind spot. There is another point I have not seen mentioned which was pointed out to me some years ago; in examining the fundus we know that the course of the vessels from the disk outward varies considerably; in some people they run more grouped together than in others. In this case if the mark be led toward the blind spot along the direction of these vessels a blind sector corresponding to them will often simulate an enlargement. I personally believe the value of this method in these cases to be problematical.

Dr. Walter R. Parker, Detroit: Anatomically the accessory sinuses offer the greatest possibility for optic nerve infections. Clinically, however, the proof of the sinuses being the sole etiologic factor in any given case is comparatively rare. The coexistence of optic nerve lesions and sinus infections does not necessarily prove a causal relationship. The possibility of some general disease being responsible for the changes in the nerve should not be overlooked. Three or four years ago I saw a case of retrobulbar neuritis in a patient with sinus infection in which the neural diagnosis was hysteria. Eighteen months later she showed unmistakable symptoms of multiple sclerosis. The examination of a case of optic neuritis is not complete which does not include that of the rhinologist. Only by reports of carefully prepared cases, such as the author has given us, will this subject be cleared up.

Dr. Robert W. Miller, Los Angeles: It has been my fortune to deal with quite a number of these cases in the past few years. I have also seen a few cases of optic neuritis due to diseases of the teeth. In conferring with specialists in other sections I find that many of them are accustomed to see these cases with a considerable, and perhaps rather increasing, frequency. Some competent observers in Chicago, where we would expect to find frequent occurrences, do not find them very often. We note what Dr. Parker has just said as to the infrequency of such cases in his experience. My impression is that if we look for them more constantly, we shall find them more frequently. It is but a very little step from the cases of sudden blindness to those which develop more gradually. More gradual development of blindness has been the rule in the majority of cases I have seen. One or two of the speakers have mentioned the importance of the general health, and I would emphasize the necessity of carefully bearing in mind the influence of general diseases and the ability to recognize all forms of disease. We should often invoke the aid of the Roentgen ray in diagnosis.

In the treatment there are two points to be especially borne in mind. In the young patients whose tissues are soft and easily influenced, in whom we have not a great amount of hypertrophy of the bony structure, it is an excellent way to put them to bed, employ local and general therapy, including hot baths, and we often secure improvement or recovery without surgical intervention. When we have made up our minds that we are dealing with a surgical case, it will be preferable not only to remove the anterior end of the middle turbinate body, but do a partial or practically complete exenteration of the ethmoid labyrinth. This insures drainage, instead of leaving the matter in doubt. The well-known variability or lack of uniformity of the ethmoid structures in different skulls, together with the fact that we are dealing with a condition of retention, seem to me to fully justify this view.

Dr. W. H. Roberts, Pasadena, Calif.: Some years ago I did a combined extraction for cataract on an old man, with good results. About a year following the operation he came in saying he could not see with the eye operated on, and gave a history of having contracted a severe cold some six or eight months previously. He had had deep-seated pain on the side of the affected eye. After some weeks' duration he had a discharge of pus from the nose which relieved the pain, but the vision of this eye was entirely gone. The ophthalmoscope showed optic atrophy. A sphenoidal abscess had caused pressure on, and atrophy of, the optic nerve.

Dr. E. H. Cary, Dallas, Tex.: The question of nasal pressure, per se, in the sinuses producing the blindness described by Dr. Stark does not seem the correct explanation to me, for we have symptoms ranging from slight vasomotor disturbances to blindness occurring in people who have nasal defects, hypertrophic and cystic middle turbinals giving nasal pressure with adhesions, as well as ethmoidal disturbances where there is neither pus nor secretion. I think it is wise and opportune to report such cases and to relate all such observations with the idea of bringing the ophthalmic point of view back to the relation between the nose and the eye. The eye and ear hospitals, which have magnified the importance of these organs to the exclusion of the nose, have materially lessened their students' chances for correct view of the whole. There must be more than mere interchange of ideas; the ophthalmologist must know the nasal possibilities. Having been trained as an ophthalmologist, no one ever charged more cases of iritis and associated eye disorders to syphilis than I have, but syphilis can be thrown out as cause in many cases, similar in type, yet differing sufficiently for an observer to be able to place the responsibility where it belongs. An ethmoidal, turbinal, or nasal ridge, either or all the cause of a nasal reflex, is easily and promptly curable.

A schoolteacher gave a history of recurring attacks of an extremely painful left eye where the vascular let down was marked; some exophthalmos was noticed and vision had been reduced to 2/200. Such attacks occurred at intervals over a period of two years, made more violent by a cold. When seen the blood vessels of the deeper structure in and around the globe near the inner canthus and lower lid gave the typical appearance the vessels always have when a nasal reflex is at fault. Intra-ocularly the patient had a detached retina, and this was the first case I had ever seen which in any way clinically backed up the theory that detachment was due to faulty secretion of fluid of the ciliary processes. Hence, in operating on the nose for the cause, I refused to trephine for retinal condition and awaited results. Within two weeks she had absorbed the fluid back of the retina sufficiently to see 16/70. The history of the case was that the retina had been detached for two years, whereas here we had a suppression of secretion, due evidently to delayed or interrupted impulses governing the ciliary body and processes. I have seen secondary glaucoma produced from too many impulses, or an exaggeration of secretion, and relieved from this same cause, by the use of similar operative procedures.

Dr. H. H. Stark, El Paso, Tex.: I found the blind spot enlargement of such a conflicting nature that I feel one is unable to judge of its diagnostic value without further investigation, and as Dr. Barkan says, it is hard accurately to determine. I was waiting for some one to bring up the question of multiple sclerosis in such cases, as did Dr. Parker. The eye symptoms of this disease are so much like the cases I have reported that I feel it quite possible for nasal sinus suppuration to be an etiologic factor in sclerosis of the brain and spinal cord. Dr. Cary speaks of a case of detached retina. In the literature collected for this paper, I find one case of blindness due to retrobulbar neuritis, which was caused by sinus suppuration. This patient had a detached retina, but the blindness was due to the pressure on the optic nerve and orbital contents, and the cause of the detached retina was considered the same. This case was not included in the report, as only clear cases of retrobulbar neuritis without complication were tabulated.

POSTOPERATIVE DETACHMENT OF THE CHOROID

WITH ESPECIAL REFERENCE TO ELLIOT'S OPERATION FOR GLAUCOMA *

HANS BARKAN, M.D.
SAN FRANCISCO

I have chosen to present this subject because, apart from the articles by Marshall and Hudson in the English ophthalmic literature, there are none but isolated case reports to be found in the American; and because I have paid particular attention to its occurrence, especially in postoperative cataract and glaucoma cases, since my attention was first called to the occurrence of postoperative detachment of the choroid in the clinic of Professor Fuchs.

There are, broadly speaking, four classes of detachment: (1) tears of the ciliary body with the aqueous percolating into the suprachoroidal space; (2) traction on the choroid and retina by organizing masses in the vitreous; (3) hemorrhage in and beneath the choroid from ruptured vessels; (4) inflammatory detachment. *Restitutio ad integrum* is possibly only in the first group, and this group, whether due to tears of the ciliary body, as Fuchs believed, or to the causes which are to be described later, is the only group to be considered under the class of postoperative detachment.

According to de Wecker (Graefe-Saemisch Handbuch) von Ammon first observed the condition, succeeded by Stellwag von Carion, Virchow and Iwanoff; these all being postmortem observations. The first clinical description we owe, as we do so many others, to von Graefe; the first clinical description and postmortem examination in the same case to H. Knapp, who diagnosed detachment of the choroid, believing it due to an underlying tumor. Necropsy findings, however, showed a collection of serous fluid.

Reuling and Marshall both gave early anatomic descriptions of the condition. Fuchs, in 1900, wrote the first classical monograph on the subject, in which he mentions that only ten cases have been reported since Knapp's case in 1868. The occurrence of a few cases in the clinic directed his attention to the matter and careful observation by himself and his assistants of all postoperative cataract and glaucoma cases in the next few months established the fact that postoperative detachment of the choroid in these cases was nothing unusual and seemed to occur with about equal frequency, whether the case was one of simple extraction or glaucoma iridectomy.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The opinions as to the nature and origin of the ophthalmoscopic findings in the cases reported before Fuchs' study are the following: Haab believed them to be cysts and explained their rapid disappearance to the bursting of the cyst wall. A cyst, however, could not grow in a few days to a considerable dimension because the delicate tissue of the retina would tear. In addition, the visible protuberance would disappear instantly after the rupture of the cyst, which it does not do. Finally, the practically retained function of the retina at the place of detachment speaks against the cyst theory. Velhagen believed them to be cyst-like detachments of the epithelium of the ciliary body. With the great expanse of the choroidal detachment, the epithelium would have to be detached not only over the ciliary body but further backward over great areas of the choroid, which, in view of the slight attachment of the epithelial cells to each other, is not to be thought of. Lindemann believed that he was dealing with swollen and blood-stained cortical masses in the vitreous after extraction. This view is entirely in contradiction with the appearance of the choroidal detachment, as well as with the fact that after iridectomy and glaucoma operations, absolutely similar detachments are to be seen. These various theories existed until Fuchs' classical description in which he so depicts the occurrence of choroidal detachment that I will simply quote his description.

> We are dealing with cases of senile cataract. . . . The course of the operation is usually a normal one, the same being true of the course of the healing in the next few days. . . . However, if the anterior chamber is shallow, it has disappeared entirely without there being any sign of rupture of the wound or filtration of the scar. Simultaneously, the eye is soft. Focal illumination, as well as the inverted image, will disclose the detached parts of the choroid projecting in hemispherical form into the vitreous. This detachment may take place soon after the operation, or may take place a few months afterward. It progresses to a certain height and then very quickly—within a few days—it recedes, the anterior chamber at the same time becoming deeper and the tension of the eye again becoming normal.

With lateral illumination, the hemispherical projections are of various shades of yellow and brown without visible vessels on the smooth surface, without folds and without movement. If examined in the inverted image, the choroidal detachment appears very dark, sometimes almost black, and if it be a very flat one, it can be diagnosticated only by the appearance of a dark shadow, the border of which forms a convex line posteriorly.

In 318 extractions with iridectomy the percentage of choroidal detachment was 4.4; in 175 without iridectomy 5.1 per cent., and it was to be noted that in the cases of detachment, one-fourth were complicated extractions in the sense that there was either vitreous loss, or cataract delivered in the capsule. In 111 iridectomies for glaucoma the percentage of detachment was 10. In examining some of these eyes which had previously been operated on for cataract, Fuchs found tears of the ciliary body in enough cases to make him feel that aqueous percolating through these tears into the suprachoroidal space could very well account for the choroidal detachment; that this does not happen immediately after the operation he explained by mentioning the possibility of the tears being, in the first few days, filled with blood and coagulated serum. That this explanation will not necessarily fit all cases is evident from the fact that in many operations after which choroidal detachment has occurred, no instrumental interference with the angle of the chamber or of the iris has taken place at all; and yet choroidal detachment has taken place.

Meller (1911) believes as Fuchs does that the detachment is caused by aqueous beneath the choroid, but traces the path of the aqueous in a different fashion; instead of as Fuchs does, through the pupil, anterior chamber, and tears in the ligamentum pectinatum into the suprachoroidal space, through the ciliary body directly into the suprachoroidal space. Aqueous is secreted in greatly increased quantities after operations and he believes that under certain conditions, possibly due to the nonrupture of the ciliary epithelium, some of this aqueous forces its way back through the ciliary body directly beneath the choroid.

Marshall's earlier view—serous exudation from choroidal vessels, and Hudson's later view and the result of his pathologic examinations—correspond well and seem to suit most cases more completely than either Meller's or Fuchs', though the probability cannot be denied that the mechanism of Fuchs as well as that of Meller may by itself cause an *ablatio* in certain cases and may form a contributing cause at least in some percentage of the entire number. Marshall and Hudson believe that the serous exudation arises from the choroidal blood vessels, particularly from the thin-walled choroidal veins, and that under conditions of abnormally low intra-ocular tension, an abnormally free transudate of fluid from these vessels occurs, which again stops when tension is reestablished. That an abnormally low tension is a necessary coincidence with choroidal detachment is plain from clinical observation as well as from the pathologic findings of Hudson. The microscopic evidence of pronounced edema of the ciliary body, which we would expect to find if the aqueous transudated directly downward, is lacking, and it does seem that the anatomy and construction of these parts is such as to form an effectual barrier to the passage of fluid from the region of the processes to the suprachoroidal space. The objection to the ideas of Fuchs has already been mentioned.

In a series of 574 pathologic examinations of eyes which had clinically been of low tension and which included perforating injuries, shrunken globes, corneal ulcers and iridocyclitis, it is to be remarked that tension when noted, as it was in approximately 90 per cent. of the cases, was found low in every one which pathologically showed a detachment. (It is not stated, however, whether these tensions were taken with a tonometer.) Meller himself asserts that the eye is not soft because there is a choroidal detachment, but because there is a leaking spot in the eye from which aqueous is constantly sickering. The choroidal detachment has only taken place because the eye has become soft and one cannot therefore say that the eye stays soft as long as the choroidal detachment persists, but that the choroidal detachment persists as long as the eye stays soft. In this way, it is to be understood why the choroidal detachment increases in size; when the opening in the chamber shuts, normal tension is reestablished, the secretion of aqueous sinks to its normal amount (its excess secretion having been, in Meller's opinion, the direct cause of the detachment; in Marshall and Hudson's opinion, the excess secretion from the choroidal veins having been the cause) and with establishment of this normal tension, the choroidal detachment disappears. There has never been a case noted of disappearance of the *ablatio* while the chamber remained shallow.

If we grant the universality in some degree of choroidal detachment in all cases of marked and quickly occurring low intra-ocular tension, and I personally am inclined to do so, because in every condition of decreased tension the eye will in some fashion attempt to restore its equilibrium, and is, I believe, more likely to do so by excessive fulness of the choroidal system of veins than by any other means: then tears in the ligamentum pectinatum must be looked on as accidental complications rather than the usual cause for the detachment.

Fuchs says in his argument against active exudation as the cause of the detachment, "An active exudation cannot be brought into relationship with a decrease of tension." Not in a closed globe, certainly, but in one in which there is an abnormally rapid escape of fluid by abnormal channels, an exudate of any kind or consistence can form with no relationship whatsoever to the tension.

Heine's operation of cyclodialysis offers a striking illustration. In his many cases he has observed choroidal detachment only once. Yet here is the ideal tear through the ligamentum pectinatum and a detachment of the ciliary body. It is true that pathologically studied, these eyes have shown that the tears are very rapidly filled with blood and within a few days fibroblasts appear and active tissue and scar formation obliterate the path of the spatula. Here again we have no choroidal detachment, I believe, because there is no sudden reduction in tension. In the great majority of eyes in which choroidal detachment is observed, there is a decisive lessening of the volume of the eye with the advancement of the iris and lens diaphragm, and of the vitreous, added to a certain amount of scleral rigidity, and large and abnormal channels of outflow for the aqueous—all factors in low tension. We know too that the more sudden and the greater the change in tension the more frequent is choroidal detachment; in cataracts about 4 or 5 per cent.; in glaucoma iridectomies about 10 per cent.; in the Lagrange sclerectomy about 20 per cent.; finally, in the Elliot, from 10 to 15 per cent.

Schur, in 1913, made the first reference to choroidal detachment in Elliot's trephine operation, closely followed by Paderstein. Since then, single case reports of its occurrence in Elliot's trephine operation have been published, and Elliot himself mentions its connection with his operation very briefly in the book dealing with his operation. Now, it has struck me in reviewing the American literature, that this most interesting detachment of the choroid after cataract and glaucoma operations is seldom noted clinically; Elliot glaucoma operations have been reported frequently in the last two years, the cases varying in number from case reports of six or ten to case reports of twenty or thirty. Some of these papers describe in detail both operation and the course of healing, and yet in very few instances is the occurrence of an *ablatio* mentioned. Knapp, however, in 20 cases noted it three times; in two, hypotension existed for from six to eight weeks; Quackenboss also mentions the late reestablishment of the anterior chamber and choroidal detachment in one case: but, in the main, it is conspicuous by its absence in the history of the cases; and yet we know from Meller's statistics, and I know personally from examination of a goodly number of these cases, that choroidal detachments occur in from 10 to 20 per cent. of glaucoma operations.

Now it is true that these detachments can be and often are evanescent; that they often occur as early as the second or the third day after the operation; that they may exist for only two or three days; and perhaps the fear of early postoperative examination of cataract and glaucoma cases has kept us from noting this condition more frequently. I have never seen untoward events happen in the examination for choroidal detachment the day following operation, by projecting through the pupil the light of a Priestly Smith lamp by means of the plane or convex mirror of one's ophthalmoscope, and asking the patient slowly to look down, upward, right and left. This, moreover, need not be done if the chamber is not shallow, for if the chamber is not shallow, there is no choroidal detachment. The number of chambers remaining shallow or entirely absent, especially in a well-performed Elliot operation, is numerous, and in practically every one of these choroidal detachments can be detected.

I have had the opportunity to observe eyes operated on by Elliot's method from the day of operation to the day of dismissal from the hospital in a comparatively large number of cases—175. These were all operated on with as large an iridectomy as we could obtain. The tension of the eye before operation did not seem to affect the frequency of choroidal detachment after trephine. Of those that showed detachment, as many were of a tension of 30-35 mm. as were of 40-50 mm The percentage of detachment was 9. In all of these the chamber was very shallow or entirely absent. In many cases, the patients were sent home without the chamber having reformed and were not seen again. Vision was not interfered with and was as could be expected from the general condition of the eye. On the day of dismissal, the field of vision in 120 of these cases was recorded (the others for some reason—glaucoma absolutum, small fields, stupidity—could not be taken) and the area corresponding to the choroidal detachment was found in the fourteen cases observed to be no different than the one taken before operation. In one case, while the object was seen, it was described as being very blurred. Twelve of the detachments occurred on the temporal side; two on the nasal side; and one superiorly. None was seen on the inferior aspect, an observation which agrees practically with the location of the detachment in cataract operations as described by Fuchs. The area of the trephine opening in all these cases was marked by a pellucid, thin, rather protuberant conjunctiva, depressed easily with a spatula, and undoubtedly draining very freely. That this was in direct connection with the detachment is certain.

Meller has reported the only case of recurring detachment in Elliot's operation: it recurred six months after the operation, the scar being extremely cystoid; no direct rupture could be ascertained. The eye was very much softer than usual at dismissal and the patient complained of a sudden blur of vision. This patient, as all the others, recovered in a few weeks, the chamber reforming.

In the cataract and glaucoma cases observed by me in Lane Hospital—thirty-two cases of cataract, sixteen of glaucoma—choroidal detachment occurred in the former in no case, in the latter in two cases. I attribute the absence of detachment in the cataract cases (though the total number of cases is of course too small to draw any general deductions), to the fact that our cataract patients are kept flat on the back with both eyes bandaged longer than in the European clinics, where, as in Fuchs' clinic, it is the habit to get the patient up the day after operation. There, in my daily rounds among from forty to fifty cataract and glaucoma cases, shallow chambers, usually without external signs of rupture of the wound, were not at all an unusual thing to find on the third or fourth morning and were regarded rather lightly; and, in fact, seldom had deleterious consequences.

In conclusion, I would state:

1. Clinically demonstrable postoperative detachment of the choroid takes place after cataract operations, with or without iridectomy, in about 4 per cent.; in Elliot's trephine operation, in about 10 per cent.; in Lagrange's sclerectomy, in about 20 per cent.; it does not occur in linear extraction, or simple iridectomy.

2. The sine qua non for its existence is low intraocular tension, caused by abnormally rapid escape of aqueous through the wound, extending over some interval.

3. The chamber is not shallow or absent because of the detachment; the detachment is secondary to the condition of the chamber.

4. The fluid responsible for the detachment is derived, probably, from the choroidal blood vessels, and not improbably from the veins.

5. Choroidal detachment is of relatively frequent occurrence after Elliot's trephine operation, and should, if for statistical purposes only, be looked for, and its occurrence noted in all cases of Elliot's operation.

ABSTRACT OF DISCUSSION

Dr. W. H. Roberts, Pasadena, Calif.: Dr. Barkan has called our attention to a fairly frequent sequel of operations for cataract and glaucoma. Postoperative detachment of the choroid has undoubtedly been overlooked by the majority of eye surgeons, as so few have made note of it. Fortunately, such detachment has but little clinical significance, as the choroids all become reattached, whether recognized or not, and no treatment is required. The cause of the detachment is purely speculative, as is the source and course of the fluid, as Dr. Barkan has pointed out. Lowered tension, the result of a leaky anterior chamber, is probably the chief cause. This would appear to be proved by the more frequent detachments of the choroid in operations favoring aqueous drainage and in direct proportion to the quantity escaping. Following cataract operations Dr. Balkan reports 4 per cent. to 5 per cent.; following broad iridectomies for glaucoma 10 per cent.; following the Elliot trephine operations or sclerostomies 15 per cent.; following Lagrange sclerotomies 20 per cent. Just how the fluid reaches the suprachoroidal space cannot be positively determined. Dr. Barkan has mentioned several theories. One that he did not refer to is a cyclodialysis caused by postoperative traction on the iris, following the iridectomy, which enables the anterior chamber to empty itself into the suprachoroidal space. Verhoeff, in a recent article (*Arch. Ophth.*, xliv, No. 2, p. 134) mentions a detachment as probably due to a cyclodialysis, in which he removed the eye, and on sectioning it, he says "no traces of a present or past cyclodialysis could be found, but no doubt a small one could have healed without leaving any visible trace." I doubt if it would be advisable for all operators, who find a postoperative empty anterior chamber, to subject their patients to such an examination as would be necessary to diagnose a detached choroid. It would subject the recently operated eye to more of a strain than would be good for it, and might cause the separation of the corneal section in cataract cases.

Dr. J. M. Ray, Louisville, Ky.: The first case I saw I did not recognize as detachment of the choroid. It occurred in a cataract case in which on making the first dressing oblique illumination showed a brownish mass coming forward into the coloboma that at the time I thought was a detachment of the retina. In this case there were two mounds with a depression or valley between. I watched this carefully and studied it with the ophthalmoscope at my second dressing and could make out very well the elevations. To my surprise by the time the wound was well healed and the anterior chamber reformed the mass had disappeared. In 1909 soon after the trephine operation came into general use I saw a case with my associate Dr. Lederman in which there was a brownish mass to be seen through the peripheral coloboma and the man complained of inability to see below. After studying this case carefully I recalled the former case following the cataract operation, and the diagnosis then seemed easy. Soon after the trephine case I saw a third in which quite a brown mass was visible with the ophthalmoscope and the patient complained very much of inability to see below. In this latter case the mass did not seem to protrude forward as much as the first two cases. In the course of time all these eyes became good eyes. There was no further evidence of any detachment. They did not seem to interfere with the remedial effect of the trephine. Dr. Knapp in his book on "Ocular Tumors" reports and illustrates a case following cataract operation.

Dr. Frank C. Todd, Minneapolis: I am one of the many who have not observed their cases with the ophthalmoscope after operation, during the time when the detachment can be seen. Dr. Barkan made the statement that such a detachment has no clinical importance and I am wondering if that is positively true. I have trephined in seventy odd cases. I have observed a number in which the vision diminished after trephining, where the tension was reduced, and where the vision remained lower than normal. It occurred to me in reading Dr. Barkan's paper that this lesion might be present to so low a degree that it could not be observed with the ophthalmoscope. I have not made observations soon after the operation, but something of this kind may have taken place which accounted for the poor vision in those eyes with very reduced tension, and I would like to have Dr. Barkan's opinion as to this character of cases.

Dr. Harold Gifford, Omaha: I must confess that I have overlooked a number of these cases. I know I have done this because it is only recently that I have begun to look for them systematically after dilating the pupil, and in about twenty-five trephinings I have found three detachments of the choroid, while in three times that number that I had done previously without subsequent dilatation of the pupil, I found only one detachment of the choroid. In one case the patient had a double detachment, one at each side. The reason for the frequency of this occurrence after trephining must be sought in the long continued hypotension. It cannot be due to the traumatism; that is, to the traumatic enlargement of the opening between the anterior chamber and the superchoroidal space; otherwise it would be more frequent after cataract extractions.

Dr. Edward Jackson, Denver: I have seen no postoperative detachments following trephining, but I have done only a few trephinings. Dr. Barkan dismissed in a sentence or two the subject of spontaneous detachment. I have one case that seems to have a natural place in this discussion. About eighteen months ago I saw a man who had been complaining of impaired vision for several weeks, and on making an examination with the ophthalmoscope found the choroid pushed forward in the region of the macula. Vision was reduced to 1/15 of normal, and the swelling gave the appearance of sarcoma. In six months the vision was 6/10 normal. He gave no history of injury to the eye, although I made a very careful inquiry concerning this point. Spontaneous detachment is more frequent than we realize. This case certainly would not have been observed had it not involved the region of the macula.

Dr. Hans Barkan, San Francisco: In regard to Dr. Roberts' remarks concerning the danger encountered by the patient in undergoing an examination for detached choroid, I will say that in Europe where I accumulated the great majority of these statistics the examination, fortunately, is not considered so serious. I have, however, kept it up in a small number of cases and have found there is no trouble about it. Of course it is to be remembered that when the chamber is not shallow there is nothing to be gained in making the examination. Therefore, the number of eyes that you might endanger are confined to those cataract cases in which there is no chamber. Where there is at the end of twenty-four to thirty-six hours no evident external cause for the absent chamber there is absolutely no danger in making the examination. In regard to Dr. Ray's observing the valley between the choroidal detachment, there are two explanations for that—the choroid and sclera are firmly attached to each other and the suprachoroidal space is obliterated by an old choroiditis or that a vortex vein entering at the bottom of the valley should naturally hold down at this point the choroid. Dr. Todd's question rather sticks me. I can only say that in these cases in which there were fourteen out of 150, or 10 or 11 per cent., we did not notice any bad effects in the lowering of tension. Perhaps the bad vision in the cases he mentioned may have been caused by the axial myopia that took place and by the wrinkling of the cornea with its consequent irregular astigmatism. I certainly cannot explain it on the basis of the choroidal detachment.

In reply to Dr. Fenton, both Professor Fuchs and Professor Meller advocate that there is no logical reason why a patient should not be given the benefit of this saving operation in addition. Pathologically speaking, there are some very good reasons why the operation should be performed, and undoubtedly the trephine hole shows more tendency to remain open; as iris lying beneath it otherwise tends to form a substratum of connective tissue and adhesions block up the hole. Whether as large an iridectomy as was performed is advisable or not, I am not in a position to say. A great percentage of these cases came in a state of advanced glaucoma with high tension. Among the operations there were not as many incipient glaucomas as there were acute glaucomas and chronic inflammatory cases; therefore it was quite easy at that time to do as large an iridectomy as possible, as the high tension almost invariably caused a fairly large prolapse of the iris into the trephine hole.

In regard to the question asked, Heine's cyclodialysis of course seems the ideal condition for a choroidal detachment to take place, but Heine in his many operations noticed choroidal detachment only once; this I take as strong proof, in accord with Dr. Gifford, that it is the sudden lowering of tension which is responsible for the detachment; we note here that the tension is lowered only temporarily and not markedly.

Factory Inspection.—According to a statement of the National Child Labor Committee, although Georgia has a child labor law, it is a dead letter on account of the failure of the legislature to provide for a factory inspector. At present the Commissioner of Commerce and Labor of Georgia is charged with the enforcement of the child labor law, in addition to his many other duties, and he is provided with only two office assistants. The bill to provide for an assistant factory inspector to enforce the child labor law was favorably reported by both house and senate committees at the last session of the legislature, but no action was taken. Dr. J. A. McKelway, secretary for the Southern States of the National Child Labor Committee, cites this as proof of the need for a federal child labor law which could be enforced by federal inspectors.

EARLY DIAGNOSIS OF INTUSSUSCEPTION

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An intussusception, though of rare occurrence, is one of the most dangerous surgical conditions of infancy. If the obstruction is recognized early the intestine may quickly be released by operative treatment.

My object is to review clearly the early symptoms which occur when there is still time to save a patient too young to localize or to describe his sufferings.

To diagnose intussusception during the second or third day is usually easy, but this delay is fatal.

Why does intussusception occur in babies? The conditions favorable to the invagination are a long mesentery and active, irregular peristalsis. The circular muscular fibers of the small intestine contract, and an upper segment of ileum is driven through the narrowed lumen. Sometimes the beginning invagination is released spontaneously. Peristalsis is increased by the obstacle and several inches of intestine are pushed into a lower segment; with the intestine the mesentery is also dragged in, aggravating the obstruction and nipping the intestine. The obstruction usually occurs in the lower ileum and the mass of bowel is pushed through the ileocecal valve and drags the cecum and colon with it.

As the intussusception is attached to the mesentery, the tumor moves in the arc of a circle and may be rotated to any region of the abdomen.

The effect of this accident is:

1. To produce agonizing pain; the crying of the baby often indicates the exact moment of the obstruction.
2. To arrest the fecal current and stop digestion and to cause vomiting.
3. At the site of the obstruction acute swelling and congestion occur, forming a tumor, hindering the release of the invaginated intestine and causing bleeding and a discharge of bloody mucus through the colon.

Thus we have the four principal symptoms: pain, vomiting, an abdominal tumor, and discharge of blood and mucus from the rectum.

PAIN

Nearly always the baby is breast-fed and of good disposition and digestion. Suddenly, without apparent cause, the child cries bitterly. *Illustration:* A fat, nursing baby of 6 months suddenly awoke at 6 a. m., and cried most piteously. This was the exact moment the telescoping commenced. The patient always cries, sometimes continuously, sometimes intermittently. The child's face is pinched and suffering, pale, cyanotic. A dangerous condition of shock is evident at a glance. The physician is most successful who listens to the mother's story of the baby's unusual sufferings and takes alarm quickly. After a few hours the symptoms of shock may disappear and the pain cease for a few hours. This amelioration is due to an edema of the intestines, and is also seen in strangulated hernia. Beware of this deceptive lull. A fatal condition is progressing and most mistakes in diagnosis occur because the physician arrives when the baby is a little better.

VOMITING

Associated with the initial pain is vomiting due to shock, arrest of the intestinal current and regurgitation of duodenal fluid. The vomiting may occur every hour or two, may cease for a while and return. It is aggravated by food and laxatives so often given. Vomiting is rarely absent in acute intussusception. During the whole period of obstruction the baby refuses food and eventually rejects what it swallows. Fecal vomiting is infrequent. Although vomiting is an every-day occurrence with bottle babies, it must be emphasized that the intussusception patient is usually breast-fed, with a healthy digestion.

ABDOMINAL TUMOR

The abdominal tumor of intussusception is a mass of telescoped ileum, cecum, colon and mesentery. It may be found in any quarter of the abdomen rotating on an axis of mesentery. The tumor is insensitive; feels like a walnut or a potato; may be localized at one time and later disappear under the liver or in the pelvis. The abdomen is generally soft and may be thoroughly palpated. Often the tumor is undiscovered and the physician's diagnosis must be made from other symptoms.

Protrusion of the bowel through the anus is a late symptom indicating the telescoping of long areas of intestine. It may simulate a prolapsed rectum. The rectal mucosa, however, is easily replaced; a mass of intestine is not.

A digital examination of the rectum should be made in every suspicious case.

Sometimes no information is gained; sometimes a hemorrhage follows; sometimes the soft fleshy mass of incarcerated intestine is felt high in the rectum. A bimanual examination may discover a mass of telescoped bowel.

Early, at times, when the child is not crying, the abdomen is soft and relaxed. Later there may be distention. Peritonitis is a rare, late development. Often the irritation of the obstruction causes an effusion of peritoneal fluid.

Adhesion of the bowel wall is unusual; I have never seen it. The chief obstacle to reduction is swelling. The surface of the intestine is often purple from congestion and the bruised appendix in a condition leading to inflammation. After the obstruction is relieved a persistent diarrhea may show the damage the intestinal mucosa has suffered. Some children have a fairly good heart action for a day or two. Fever is not a symptom of intussusception, yet many cases have a rise in temperature after a few hours, probably from intestinal toxemia.

COURSE OF DISEASE

If the telescoped bowel is not released within twenty-four or thirty-six hours the baby will surely die of pain, vomiting, exhaustion, shock and toxemia from poisons exuded by the injured intestine. Death takes place in from two to seven days. Spontaneous sloughing of the intussusception has been reported. I saw one case, but the child died suddenly a year afterward, probably of intestinal stenosis.

The physician, in dealing with a supposed intussusception in a baby, faces dangerous possibilities. To wait may be to lose the child's life. To advise and force a dangerous operation in case of a mistaken diagnosis is a disgrace.

Several times I have anxiously watched a baby who was vomiting and in pain and have seen the symptoms spontaneously cease.

When a suspicious case is seen it should be closely watched. Much mischief is caused by giving food and laxatives. To give opiates for pain is to mask the symptoms until it is too late to act. An experienced clinician will quickly realize he is dealing with a serious atypical case, not one of infantile indigestion and colic.

BLOODY MUCUS STOOLS

The jamming of the intestine produces swelling, congestion and irritation. As a result blood and mucus exude from the lower end of the obstruction and flow from the anus, either as a hemorrhage or as bloody mucus dysentery.

A bloody mucus stool suddenly passed from a healthy baby is almost pathognomonic of intussusception and was absent in but one of my sixteen cases. The patient may pass one or two small fecal stools, the contents of the lower bowel; afterward nothing but blood and mucus.

The intestinal hemorrhage may occur early; first a gush of bright red blood and then bloody mucus, possibly after a digital examination or taking a rectal temperature. The finger or thermometer is withdrawn covered with blood, and bleeding follows.

Occasionally the intestinal hemorrhage is observed after the first day, too late for an early diagnosis.

When the incarcerated intestine has been pushed deep in the lower bowel there may be rectal tenesmus and bloody mucus stools which simulate dysentery.

When intestinal obstruction is complete the constipation is absolute and no gas passes the anus. The question should be asked: Has the child passed gas since it was taken ill? An intussusception may be excluded if large amounts of gas have been discharged, but small amounts of gas may leak through the nipped bowel. Twice in my experience the mother observed the passage of gas although a subsequent operation showed a dangerous intussusception.

One should always suspect an intussusception when a healthy breast-fed baby suddenly cries, vomits, passes bloody mucus stools and shows symptoms of shock. The surmise becomes almost a certainty if the thermometer or examining finger is covered with blood.

A roentgenogram of the intestines after an injection with bismuth is strongly advised. Three times I have seen the symptom-complex of intussusception confirmed by this method. All three patients were operated on and recovered.

A surgical consultation should at once be called and the responsibility shifted to the surgeon.

As to the operation, much depends on the surgeon's skill and speed. A minimum amount of anesthetic should be carefully given. The operator should not eviscerate the child to find the obstruction. The incarcerated intestine should be pushed, not pulled out; the appendix should not be unnecessarily removed. The proportion of operative cures of intussusception steadily increases.

A successful, experienced surgeon has several times said to me that if a case of intussusception was seen early operation was easy, and the credit of saving the life belonged to the physician who could at once recognize an atypical case.

ILLUSTRATIVE CASES

Case 1.—Ileocecal intussusception with early diagnosis. James, an artificially fed 11 months' boy weighing about 17 pounds, had easy digestion with no food vomiting, though his weight had been stationary for a month. At a night feeding—10 p. m.—a slight increase was made in the food. At midnight the baby commenced to vomit and cry and continued to vomit frequently until the next noon. The last vomited fluid was yellow, a regurgitation from the duodenum. With the vomiting the baby suffered from pain, crying paroxysmally and seeming in utter misery. The baby passed a fecal stool at 6 a. m. and the mother thought that the child passed gas during the night.

A rectal injection given during the morning was almost instantly expelled. No food or laxatives were given from the onset of vomiting.

Seen at 1 p. m., thirteen hours after the vomiting had commenced, the child was crying from abdominal pain. Temperature 100.5; heart sounds strong. No abdominal mass was felt on palpation. After the withdrawal of the thermometer from the rectum there came a gush of fluid blood and mucus. Nothing was felt on digital examination. Nothing was elicited by bimanual examination.

The condition suggested an intussusception: A baby in good condition was, without adequate cause, attacked with severe abdominal pain with vomiting and the discharge of blood from the rectum. From 1 to 5 p. m. the vomiting ceased and the baby seemed easy, without pain. There were five small fluid, bloody stools. The improvement during the afternoon did not dispel the idea of intestinal obstruction, as bitter experience has taught me that in a case of intussusception, after a fierce onset of pain and vomiting, a lull in the patient's misery may occur from edema of the intestinal mucosa.

The surgeon agreed with me that the case was one of intussusception and a roentgenoscopy was done; but little bismuth could be injected into the rectum and the picture showed the obstruction to be in the left lower quadrant. The operation showed the mass of invaginated intestine in this region, but neither the surgeon nor I could feel any abdominal tumor.

Operation by Dr. Marshall Clinton, twenty hours after beginning of illness, showed a large amount of serous effusion from peritoneal irritation. The invaginated intestine lay about the sigmoid flexure; about 20 inches of ileum had been pushed through the ileocecal valve and the cecum, ascending and transverse colon had been jammed into the left lower abdominal quadrant. The serous surface of bowel and appendix were much congested. The ileum was slowly pushed out from the colon; there were no adhesions; the appendix was removed. Length of operation about twenty minutes. There was no vomiting. The baby was feverish and had frequent stools for a week. It was fed on breast-milk. Recovery was complete.

Case 2.—Early diagnosis. Helen, aged 3 months, was partly nursed and partly fed.

November 6 at 3 a. m. the child took the bottle well and slept until 6 a. m., when it attempted to nurse and seemed ill, and cried as if in pain. She commenced to vomit and passed two stools. During the morning she cried a great deal, vomited five times in three hours and had six small stools of mucus and blood. Occasionally fluid blood flowed from the rectum. Examination was made two hours after symptoms began.

On palpation to left of navel a sausage-shaped mass 1½ inches long was felt; it was not tender. The abdomen was relaxed. On rectal examination, nothing was felt. Blood flowed from the rectum directly afterward.

Four hours after the onset of symptoms a surgeon agreed with me that an intussusception existed. There were:

1. The sudden onset symptoms in a healthy child.
2. The occurrence of vomiting, pain, bloody stools, and presence of an abdominal mass.

A large rectal injection of warm water was given, after which there was relief for several hours from vomiting and pain.

A surgeon, Dr. Clinton, was called. He found the child easy and comfortable. The abdominal mass had disappeared, displaced by injection. Both the surgeon and I felt that an intussusception existed and that the temporary amelioration was a deceptive lull.

Roentgenoscopy at 4 p. m. showed intussusception in the right upper quadrant. Some bismuth passed, the obstruction showing closure of the lumen of the bowel was not complete.

Operation was performed at 7 p. m. No abdominal tumor was felt during the late afternoon. Blood leaked several times from the rectum. Four inches of the ileo-invagination were pushed out. Relief from the intestinal obstruction occurred with rapid improvement.

Case 3.—Intussusception with late diagnosis, in a 6 months' old fat baby, breast-fed. May 22, at 6 a. m., the child, previously in perfect health, commenced to cry as if in pain (acute), and grew white as if in a faint. It was given an injection, also castor oil and a hot bath. It was quite ill during the day, would not nurse, and during the afternoon had several discharges of bright red blood from the rectum.

May 23: The child was quite collapsed; vomited through the day and had three or four stools of mucus.

May 24: Fifty-two hours after the onset, 10 a. m., the heart was rapid and feeble. Temperature 99. The child was depressed, had passed no gas or fecal matter since the beginning of its illness. Rectal examination was negative. A mass was felt in the lower quadrant of the abdomen by palpation.

At operation, about sixty hours after the onset of symptoms, a gangrenous appendix was removed. The duration of operation was fifteen minutes.

The mass felt in the left lower adbominal quadrant was a mass of invaginated bowel. The ileum had penetrated into the cecum for 6 inches; the ascending colon was pushed to the left of the umbilicus; the lower ileum and colon were intensely congested; the ileum was easily pushed or pulled out of the ascending colon; the appendix was strangulated and gangrenous.

The child was in good condition after the operation but died in two hours.

Case 4.—Intussusception, diagnosed as a case of dysentery. A girl, aged 5½ months, breast-fed, was well until July 19, when it seemed in pain and passed a number of stools of pure blood. It was sent as ill with dysentery to the Fresh Air Mission Hospital.

July 20 and 21: Occasional vomiting occurred of a yellow fluid. Frequent stools of mucus and bright red blood were passed, but no fecal matter. There was a suggestion of a tumor in the left and lower quadrant.

July 22: Temperature 102. The child was in great pain, crying for a day at a time. There was no suggestion of collapse. The abdomen was not distended. There were numerous stools of mucus and blood. A tumor was felt in the left lower quadrant. The child vomited fecal matter during an irrigation. The introduction of the tube into the rectum was very difficult. Rectal examination showed the intestine occluded about 2½ inches from the anus, by a mass of intestine. The finger in the rectum pushed back the intestine out of reach.

Operation at Children's Hospital about eighty hours after the beginning of symptoms.

An abdominal incision 3 inches long was made between the navel and pubis. Some serous fluid escaped. There were no adhesions. A large mass of intestines was crowded into the region of the sigmoid flexure. The entire colon was slightly congested. The ileum was invaginated through the ileocecal valve. The small intestine, easily pulled out, occupied the interim of the cecum, ascending, transverse and descending colon.

On the surface of the ileum, 9 inches from the ileocecal valve, was a depression like a dimple, on the surface opposite to the attachment of the mesentery, perhaps the beginning of intussusception.

The surface of the intestine was brownish here, not gangrenous.

The child collapsed at the close of operation. Two hours after the operation its temperature was 106.5, pulse 240. Death soon followed.

CLINICAL AND ELECTROCARDIOGRAPHIC STUDIES ON THE ACTION OF DIGITALIS *

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It is extraordinary that, after continuous use for 130 years, the study of the action of digitalis retains so vital an interest, not only in clinical medicine, but also in experimental pharmacology. This interest has been quickened by the fundamental investigations of James Mackenzie on the mechanism of the heart beat and by the construction by Einthoven of a galvanometer suitable for registering the action currents of the heart.

I mention James Mackenzie especially, because in the bewildering variety of studies which he has stimulated he has, almost alone, kept in view the essential objects of investigation in the domain of cardiovascular disease. These are, first, the study of symptoms suggesting the presence of incipient heart disease, and second, the study of the mechanism of heart failure and its treatment. His study of the disturbed rhythms of the heart was undertaken to ascertain whether they had a vital relation to these subjects, and to learn whether an appreciation of their significance would aid in understanding altered function.

I doubt very much whether the disordered rhythms of the heart, taken by themselves, presented a subject of fundamental interest to Mackenzie, and in that, too, he has differed from his followers. The reader remembers, no doubt, that he called his book "Diseases of the Heart"; but its theme may be said to be the arrhythmias in their relation to heart failure. This view of the arrhythmias gives them a new significance in studying the action of drugs. They can be made to serve as important indicators in estimating the value of therapeutic effects. Mackenzie's work, therefore, provides an important reason for reexamining the action of digitalis. Just as it was important to recognize the arrhythmias and to appreciate their significance, it was necessary to have far more accurate and more satisfactory methods of registering the motions of the heart than arterial and venous tracings, which record only the motions of the vessel walls, and in many instances record them badly or not at all. The string galvanometer, although it is not a substitute for them, has come to replace the older methods by one eminently practical, free from error due to the personal equation and reliable within the limits of its capacity. This instrument has made Mackenzie's work more easily available. Its use, as I hope to show, has made possible the introduction of added criteria for recognizing the action of drugs. Mackenzie's new conceptions and Einthoven's new instrument, reported almost simultaneously, made therapeutic investigation from a new point of view desirable.

I want to discuss the effects of digitalis on heart rate, on conduction, on the electrocardiogram, on blood pressure and on diuresis. But because there is still a very distinct divergence of opinion between practitioners of clinical medicine and pharmacologists, as to how digitalis acts, I must take account of the views of both in presenting the subject. But the matter is not simple, for clinicians differ in the results of their observations, and pharmacologists on the interpretation of experiments.

The school of Schmiedeberg still maintains that the main action of a digitalis body is on heart muscle; the school of Gottlieb, while it does not deny to digitalis bodies a cardiac action, still maintains the view that it has an important action on the walls of the arteries. Both schools find that the drug increases the excursion of the heart in contraction, both believe that it elevates blood pressure, both believe that it increases the amount of renal secretion.

It is perhaps not an overstatement to say that in a general way clinicians have been too much influenced by these experimental results and have felt obliged to find that the administration of the drug in patients results in parallel phenomena. It requires a very small experience in treating patients suffering from heart disease to find oneself disappointed because the expected results did not occur. And when discrepancies were noticed, the discovery was not often followed by an effort to explain them. The subject was often dismissed by finding fault with the potency of the drug or by discovering an idiosyncrasy in the patient. But even if drugs were always potent and there were no individual idiosyncrasies, it is extremely likely that patients would continue to react in different manners to the drug. And the reason for that must be that individuals, although they suffer from what in a general sense is called heart disease, yet present a great variety of clinical pictures.

If the cardinal symptoms of heart failure alone are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, it becomes clear that patients do not usually present all of these signs at once, that some present one or two of them, or a group. It must be apparent that the pharmacologic experiment does not take this diversity of circumstances into consideration; the experiment is done under artificial conditions, and the doses which are employed bear no relation to those permitted in clinical medicine. There can be no question of the usefulness to therapeutics of these experiments; as guides, they are indispensable, but it must be clear that they neither replace nor parallel the clinical conditions we must treat. That there has consequently been a divergence between the results of pharmacologists and clinicians in a practical sense was inevitable. The responsibility for it is probably shared equally by both. Pharmacologists have dealt usually with simple normal conditions; clinicians with complex pathologic ones.

In therapeutics, divergent accounts of the action of the digitalis bodies are also found. For instance, they are sometimes said to reduce the heart rate, and to act almost as specifics; others deny such an action. In the presence of fever their use is discouraged by some as valueless. In the domain of valvular defects a variety of indications and contradictions for giving the drug prevails; some regard these as unimportant. Until recently, some avoided it in cases of high systolic arterial pressure, because it was reputed to elevate this to dangerous limits. Some, again, have detected a striking effect in a short time (Marvin), while others have recently reported that it has no effect on pressure at all. Its effect on diuresis has, on the whole, been commonly held and has been gained on account of the disappearance of edema, when this sign of heart failure is present.

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* From the Hospital of the Rockefeller Institute for Medical Research.
* Read before the Section on General Medicine, College of Physicians, Philadelphia, Dec. 14, 1914.

A drug having apparently such very powerful actions as digitalis must be extremely valuable and must gain in usefulness if its modes of action are carefully studied and precisely recorded. It has been no easy task to reconcile the divergent views drawn from experimental experience, and equally difficult to understand the contradictions expressed by reliable clinicians. We have therefore been engaged in the Hospital of the Rockefeller Institute in the attempt to understand and to reconcile these differences, in order to make more available the data of experimental pharmacology, and to ascertain whether the indications for the use of digitalis could be simplified if patients were grouped with a view of delimiting the conditions in which uniform results might be expected. For these purposes it has been deemed wise to study digitalis in the human subject, because in the first place it is about its action in patients that information is wanted, because, in the second, that information can, in practically all respects, under present conditions be satisfactorily obtained, and because, in the third place, the study can be made not only without any prejudice to the patient, but, indeed to his advantage.

It is apparent, if the cardinal symptoms of heart disease during heart failure are considered, rapid pulse, disturbed rhythm, high blood pressure, dyspnea, pain and edema, that not all patients present all of these complaints, and that each patient suffers from only a selection of them; of these symptoms the most obvious basis for the arrangement of patients into groups for the purposes of treatment, especially at the present time, is rhythm. Rhythm, it will be remembered, was the subject with which Mackenzie started. The basis has, in point of fact, been found extremely serviceable, for in a general way it has been said that the drug acts on cases of auricular fibrillation very successfully, and has even been called, erroneously of course, a specific; while in cases presenting a sinus rhythm it has been said to fail. We have therefore divided patients primarily into fibrillators and nonfibrillators. On the question of rhythm, pulse rate also depends, and we regard these two factors together, but not, of course, as the same. The second basis on which patients can be divided is the question of edema and the retention of water, involving the question of salt metabolism, and these two symptoms may also be regarded as phases of a similar disturbance. The third basis on which we have found it useful to study patients has been on the basis of the height of blood pressure. We do not, of course, pretend that a classification such as this presents all the points of view from which either heart failure or the treatment of heart failure can be viewed; it omits important symptoms such as dyspnea and pain. Often these are cardinal, often they are secondary signs. But, after much consideration, we have adopted it as a useful working plan for testing the effect of drugs. The classification then, is as in the accompanying tabulation.

CLASSIFICATION OF PATIENTS

A. Normal rhythm..	a. Without edema.	1. With normal blood pressure 2. With high blood pressure
	b. With edema	3. With normal blood pressure 4. With high blood pressure
B. Auricular fibrillation	a. Without edema	5. With normal blood pressure 6. With high blood pressure
	b. With edema	7. With normal blood pressure. 8. With high blood pressure

The group of patients which presents the simplest form of disease is the first one, in which the rhythm of the heart is normal, there is no edema and the blood pressure is not elevated. This is the state found in a patient who, if he presents himself for treatment at all, is in an early stage. It is naturally understood that an early stage of heart failure does not by any means suppose an early stage in heart disease. It is, on the whole, the simplest kind of heart failure which one is called on to treat. The general physiology of such a patient presents the nearest approach to the normal. It is the effect of giving digitalis to him to which we have confined our attention and with which this report principally deals. It is clear that often he requires no drugs; if digitalis is given him it is important to determine what effects are to be expected, and also how the expected effects are to be recognized. This is the method of experimental pharmacology, and the results obtained in this way can be most nearly compared with experimental conclusions. They can be made also to serve as a basis for considering the effects on the more complicated groups.

I have mentioned earlier the topics I mean to discuss, but it is well to dwell for a moment at this point on another. Aside from changes in the physical signs which some clinicians believe themselves capable of appreciating, we have no means whatever of estimating alterations in the functional efficiency of the heart, referable *to the heart itself*. If it were possible, an accurate estimation of contractile force would be the most important single measure to take, but for this we have no satisfactory criteria. Observations on blood flow, blood pressure, estimations of volume output, electrocardiography, have all been equally disappointing. Those effects reported earlier, of changes in the magnitude of ventricular contractions gained in experiments, are more recently admitted (Joseph) to have been obtained by doses far too great. The much smaller doses now used are still much larger than are permitted in therapeutics, but even these fail to show marked changes in the extent of the excursion of the ventricular wall which were formerly held to indicate the nature of effective digitalization. The methods employed in pharmacology are not superior to those now available in clinical medicine. Both are on a par in respect to obtaining objective records of this phase of digitalis action. We must believe, therefore, that if digitalis increases the ability of the ventricles to pump blood, it does so by means of a change which is more subtle than can be distinguished by our methods.

The most important alteration we look for traditionally is in the pulse, or better, the heart rate. This is the first subject we have investigated. For the present we omit fibrillators from consideration. The reduction in the rate of the heart is an effect of digitalis on which we have been taught to rely, both by pharmacologists and clinicians. It is, unfortunately, an effect which we have not found constant in the type of case we are considering. We know also that it fails to reduce rate in the tachycardias of a paroxysmal nature, in those of exophthalmic goiter, and in those of fever. That the pharmacologist could report such an effect depended, no doubt, on the size of his dose. That the clinician believed it to occur depended until recently on his not distinguishing between fibrillators and nonfibrillators. The brilliant reduction in rate was found in the former. It was also found in the sinus rhythm when edema was present; but neither group of patients is at present under discussion. In the absence of edema, a reduction in rate may be said to occur principally in the hypodynamic and unstable heart, in the heart which for unknown reasons undergoes spontaneous alterations in rate. In hearts of this nature, a natural tendency to reduction is accentuated by administering digitalis. Aside from these, the majority of individuals do not respond to therapeutic doses of digitalis by a fall in heart rate. When amounts equal to 0.4 gm. of leaves a day are given for five to seven days, ventricular slowing does occur, but it occurs as the result of the blocking of the auricular impulses. The latter continue at an unreduced speed and do, as a matter of fact, usually exceed their initial rate. In view of the continued initial, or, in most cases, accelerated auricular rate, it is doubtful whether one may speak of a digitalis slowing of the heart as a primary phenomenon. It depends obviously on the disturbance of a function other than that of stimulus production. We have been led to conclude from our observations, therefore, that digitalis slows the sinus rhythm only in the group of hypodynamic hearts, and that to produce slowing is not a primary function of digitalis in therapeutic doses.

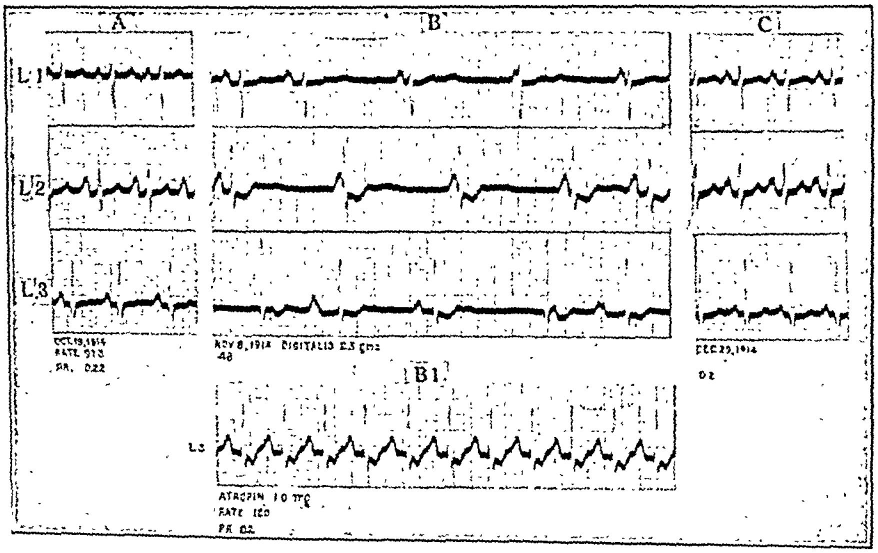

Fig. 1.—Divisions of the ordinates equal 0.1 millivolt; divisions of the abscissae equal 0.04 second. *A*, before digitalis was given; three leads (Einthoven) are shown. *B*, after 2.5 gm. of digitalis had been given; inversion of the *T* wave is shown in Leads 2 and 3; the curves in Leads 1 and 2 show a type of nodal rhythm described in the text. *B 1* was taken a few minutes after *B*; atropin, 1.0 mg. was injected; it shows that the rhythm of the heart returned to normal; the inverted *T* wave persisted; Lead 3 is shown. *C* shows the three leads; the curves were taken when digitalis had been completely eliminated and the curve had returned to the outline of the control, *A*.

Mention has been made of the blocking of auricular impulses after a sufficiency of digitalis has been given. It is a phase of its action to which Mackenzie drew attention clinically and von Tabora in experiments. Mackenzie, and more especially Lewis, believed it to be produced only when the conducting fibers between auricles and ventricles were previously damaged, more especially by rheumatic inflammation, as evidenced by the fact that the auriculoventricular interval was unduly lengthened. We have been able to show that an action on conduction can invariably be observed in patients, varying from simple lengthening to block. An effect on conduction may therefore be set down as a usual effect of giving the drug, apart from specific preexisting injury. An evidence of delayed conduction can be observed very early after the administration of the drug has been started. We have noticed it within forty-eight hours. In many instances, the auriculoventricular interval gradually lengthened during the succeeding three to five days until partial heart block occurred. We have believed it possible to maintain conduction time at any length we have thought suitable, by controlling electrocardiographically the amounts of digitalis requisite to produce the effect desired. Not all cases, however, show the gradual lengthening in conduction which I have described: block then occurs with extreme abruptness within a few hours. After the administration of digitalis has been terminated, alterations in conduction usually continue about two days. In the exceptional case, it may persist for two weeks. If gastro-intestinal symptoms have occurred, they do not persist beyond two or three days.

The occurrence of delayed conduction has been dwelt on for the purpose of showing that in certain cases, probably in a large number, the fact that digitalis is acting on the heart can be ascertained early in the administration. When the sign is obtained, it is definite. The problem which arises for decision is whether or not it is a sign which indicates a beneficial action on the heart. For a definite answer on the basis of this sign alone, more experience is required. A greater degree of digitalization can be obtained; but we may learn that on obtaining this effect, the maximum which is desirable has been reached.

When full doses of digitalis have been given, sufficient to cause delayed conduction, abnormal heart rhythms are commonly seen. They have been much described and occur as exaggerations of the normal sinus arrhythmia, extrasystoles, partial heart block, and rarely auricular fibrillation. We shall omit further mention of these. One arrhythmia which is still practically unknown as the result of giving digitalis may be described here. In this form none of the auricular beats is blocked; auricles and ventricles both continue to beat and do so almost at the same rate (Fig. 1). But there is incomplete coordination between them, so that a fixed relation ceases to exist. They must, however, be closely related. The conclusion cannot be escaped that they have an origin in common, or two related origins. If it is a common origin, the lack of exact coordination must depend on a shifting of the site of stimulus production, similar to one we have described in the ventricles, possibly complicated by changes in conduction; if it depends on two competing stimulus-producing foci, they must be actuated by a common factor. It is a matter of interest that we have found arrhythmias of this form associated only with various forms of intoxicants, notably digitalis. Robinson and Auer have seen it also in the presence of anaphylactic shock.

Aside from the lengthening in auriculoventricular conduction which, as has been said, begins in many cases soon after digitalis treatment is initiated and can be taken as an indication that an effect on the heart is being obtained, even though no change in rate has occurred, another new sign in the electrocardiogram appears to be one of great importance. This sign is an alteration in the size, shape, and direction in the *T* wave (Fig. 2, *A* and *B*). If digitalis is given to a patient whose electrocardiogram contains a *T* wave pointing in the usual upward direction, the first change noticed is usually a diminution of the height of this wave, usually in the third lead first, and later in the second. The first lead may also show changes, but relatively speaking, less frequently. The change may be noticed as early as twenty-four hours to consist in a diminution in the height of the wave, but at the end of forty-eight hours this change is more distinct and the wave may by this time have become iso-electric. At this time or, more often, later, it becomes inverted. Instead of becoming iso-electric or inverted, it may become diphasic, and in a number of cases of this sort it is easy to distinguish *T* waves consisting of two parts, a first portion which becomes inverted and then returns quickly to a second portion which represents the end of the original wave. The diagram (Fig. 2 *A*) explains this relation. The dotted line represents the altered portion of the curve. There are, of course, many electrocardiograms in which, for pathologic reasons, the *T* wave is originally pointed in a downward direction. If digitalis is given to such patients, the direction of the *T* wave is altered, and during the action of the drug may be directed upward (Fig. 2 *B*). An especially beautiful example of this variety we have found in a case of complete heart block. Usually the negative *T* wave becomes deeper, especially in the third lead. That the change is due to digitalis is proved by the fact that when the drug is stopped, the *T* wave returns to its original size and shape. The length of time required for it to return to its initial condition varies between five and twenty-two days. To be certain of the change, we have repeated the observation a number of times in the same individual, and to be certain, also, that it is not dependent on a pathologic heart, we have shown it to exist in persons whose hearts are quite normal. It is a sign, then, that the heart is digitalized, and it is a sign which appears early. It appears at a time when no change in conduction need have occurred. It appears in the absence of any alteration in rate. The factors on which the change in the *T* wave depend, we cannot explain precisely at the present time. That it is an evidence of an alteration in the contractile substance of the heart is an inference which is naturally drawn from the circumstance that at the present time the electrocardiogram is generally regarded as the expression of changes in the electric state of the muscle. Whether, in a clinical sense, the change in the *T* wave is to be taken as an indication of beneficial or not beneficial action, it is impossible to say, though there seems little reason to question the fact that it is.

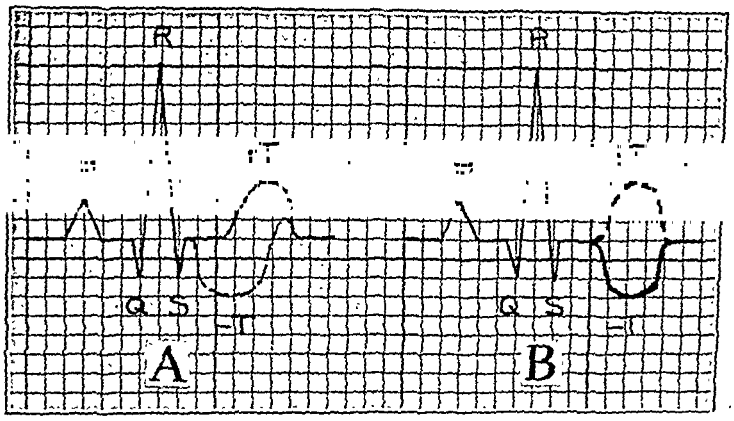

Fig. 2.—*A*. The solid line represents the normal outline of the electrocardiogram. The *T* wave is directed upward. The dotted line shows the change which occurs in the *T* wave under the influence of digitalis. *B*, in a similar way, shows the change in certain cases when the *T* wave is initially directed downward. Under the influence of digitalis it turns upward.

Many matters for consideration arise in relation to the sign. It is a matter of discussion just now, for instance, whether the effect of digitalis on heart muscle depends on an intimate combination of the drug with the muscle (*Speicherung*) in which digitalis is destroyed or consumed, or whether it acts merely by virtue of its concentration in the circulating fluid. In the latter case, the signs of its effect disappear promptly with the withdrawal of the drug, with the diminution in its concentration. The drug is not consumed and, if the solution is recovered, may be used with equal efficiency in a succeeding heart. The essential point of difference is as to whether or not the drug is actually consumed when it is given. In both cases it must, of course, be excreted. If the drug acts merely by virtue of its concentration, a rapid excretion may be expected, and its composition may, of course, be altered; it need not necessarily reappear as the original substance. In the case of its being consumed, its composition on excretion would naturally be altered, but one would expect the rate of its excretion to be much delayed.

In view of what has been said of the change in the *T* wave, under the influence of digitalis, and more especially of the dependence of the change on alteration in the heart muscle, it is difficult to escape the conclusion that a degree of great intimacy in the combination between the drug and the muscle must have taken place. It is clear that the influence on the muscle may outlast the presence of the drug, but it is difficult to believe that an action of such prolonged duration (three weeks), after giving the drug has ceased, can depend on a simple matter of concentration.

Two criteria have, then, been shown in electrocardiograms to indicate surely the fact that digitalis is acting on the heart: the first in the slight but definite lengthening in conduction, the second the very curious and very constant alteration in the *T* wave. Even if no slowing whatever of the heart occurs, we may be certain, by virtue of finding one or both these phenomena in electrocardiograms, that definite digitalis action on the heart has taken place. Rate, the criterion for which we looked and on which we relied, fails us, but in its place we have these other and surer ones. If these statements prove to be correct, they necessitate an alteration in the indications for the use of digitalis. It is not a drug, at least in the cases we are considering, which alters the rate of the heart—it is a drug which, by virtue of its combination with heart muscle, has a bearing on contraction, an effect which is evidenced by its effect on the *T* wave. It appears, then, that the groups of cases in which the drug was supposed to be of value have decreased in number, that is to say, those in which an effect on rate was expected, while groups in which new indications for the use of the drug may be found in the light of muscular and conduction effects we may hope will increase. In consequence, many patients with heart disease from whom digitalis has been withheld may, with new criteria, be drawn into groups for whom it is indicated.

In contrast with the action of digitalis in nonfebrile patients, it is worth referring to the well-known and often mentioned failure of the action of digitalis in cases of fever. Its general failure has been dwelt on by Mackenzie, whose opinions have recently suggested an investigation of the problem to Gunn in Cushny's laboratory. Its failure in pneumonia, in particular, has been dwelt on by G. A. Gibson of Edinburgh. Similar views in regard to the reputed impotence of the drug are no doubt held in this country. Elsewhere, as in Krehl's clinic, it is usually given and thought to be beneficial. It is not exactly clear what is meant by a failure of digitalis to act in the presence of fever. As an antiphlogistic it need not be considered. What is usually wanted in fever is an agent either to slow the pulse or to increase its strength. It is no doubt a general experience that digitalis does not slow the pulse in fever, and its failure to do so is the complaint most often made. That failure in this respect is not unexpected is clear from our experience in nonfebrile cases. Whether it strengthens the pulse or, in other words, increases the force of ventricular contractions, is an effect which has also been much discussed. Satisfactory objective measures of this are not available, but there is much clinical, that is to say, subjective evidence on the part of observers favoring the idea that it exists. In the absence of evidence bearing on contraction, [illegible] evidence can be supplied to show [illegible] action during fever of a nature precisely similar to that already described in nonfebrile patients. This evidence consists, as in the nonfebrile, in its influence on the auriculoventricular interval and on the *T* wave. Here, as in the nonfebrile cases, the changes begin within from twenty-four to thirty-six hours and persist for days after defervescence and after the giving of the drug has been stopped. Whatever its nature, it is clear that the same sort of support can be given the heart by digitalis during fever as in its absence. That this is the sort of support that the heart demands may be open to question. It is an error, therefore, to regard its action as a failure until its efficiency from actual, rather than from incorrect points of view, shall have been examined. Possibly as an aid to contraction, much may be gained from its use; but the expectation of obtaining an action on heart rate must be abandoned.

There is, however, a group of febrile cases in which digitalis acts efficiently on rate. In our experience these have not been patients exhibiting the normal sinus rhythm, but patients showing auricular fibrillation or auricular flutter. These rhythms appear spontaneously during attacks of fever and disappear spontaneously afterward. Occasionally the ventricular rate in such cases is inordinately high, the high rate itself being a predisposing factor toward heart failure. The most desirable thing to accomplish in these instances is a reduction in rate. By the use of intravenous doses of strophanthin, one might expect to block the greater number of auricular impulses which cause the acceleration of the pulse and to reduce the ventricular rate to reasonable limits. In several patients in whom the abnormal rhythms were found, strophanthin was injected and has acted in the described way. Under these circumstances this method of treatment has seemed to us a life-saving remedy. It may be mentioned that, except for its greater speed in action, strophanthin is not necessary and that exactly similar results in cases of flutter have been obtained by the use of digitalis by mouth. The effect on rate which digitalis has on auricular fibrillation and flutter, when these occur in fever, is precisely the same as in the nonfebrile state, and the results obtained are precisely the same. We are led to believe, therefore, although we have reached no definite conclusion, that there is no difference in principle between the way digitalis acts in fever and in nonfebrile conditions. One might venture the suggestion that, from the point of view of heart rate, and from the point of view of an emergency, the possession, in certain cases, of a heart beating after the manner of auricular fibrillation or flutter may, in fever, be a valuable asset, for it is in these rhythms that digitalis, by blocking auricular impulses, is able to slow the pulse rate. It may be mentioned, incidentally, that fever patients having auricular fibrillation initially are not necessarily prejudiced in the outcome of the disease by the abnormal rhythm.

Another topic long a subject of conflict is the relation of digitalis action to blood pressure. Clinicians have often withheld the drug from patients having high pressure in the fear of producing unpleasant consequences, as, for instance, cerebral apoplexy. One of the most recent contributions to this phase of the action of digitalis has been Marvin's. His investigations with a single dose of the tincture in normal medical students led him to conclude that, after five hours, an elevation of from 10 to 15 mm. Hg occurred in systolic pressure, and that the effect of this persisted for fifty hours, when the curve resumed its initial height. Many exact studies have been made in recent years, notably by Mackenzie, Price, and Lawrence. These and other investigators have failed, on the whole, to find pressure changes resulting from the administration of the drug. The form of this statement demands a certain modification. The clinical reports bear the defects mentioned earlier—that they are based on cases indiscriminately selected, or not grouped at all. They include cases with high pressure and cases with low. The heart mechanism, in itself an important factor, is, especially in the German reports, not considered. The estimation and interpretation of pressures in auricular fibrillation, as will be shown in another place, present problems much more intricate than those in the sinus rhythm, and the results of investigations indicate a different response to digitalis.

In the group of patients under consideration, those with sinus rhythm, without edema, and with a moderate or low systolic pressure, we have seen no substantial alteration in the level of either the systolic or the diastolic curve. Our conclusions are like those of other more recent observers. The few opportunities we have taken to verify the observations made by Marvin have failed in establishing results similar to his. In the cases we have studied, then, no alteration in pressure was found. In so far as the older fears are concerned, it is apparent that digitalis must be considered a safe drug to use.

Vascular effects, however, aside from changes in pressure, may be produced, and the untoward or beneficial nature of these requires consideration. A specific vascular action, not dependent on heart action or on pressure effects, has been advanced and held by the school of Gottleib. Gottleib, while admitting a cardiac action of digitalis, nevertheless maintains that the peripheral action of the drug is the one by virtue of which its prime effects are produced. More recently clinicians, employing optical methods of registration devised by Frank, have again taken up these aspects of digitalis action, and reports are now being published of alterations in reaction of the blood vessels, notably in the tension of the vessel walls, when they are under the action of the drug. It is the results of these investigations, far from satisfying as yet, which demand further study in order to establish the assurance that the vessels of the body, and more especially of the brain and meninges, do not become subject to injury as the result of giving digitalis.

The last phase of the action of digitalis which I wish to discuss is the relation of the drug to the excretion of urine. The foxglove obtained its initial reputation because diuresis was so enormously increased when it was administered. For almost a hundred years it was supposed that this was the one and most striking of its effects; but now the situation in regard to this phase of the problem is less simple. The questions now being discussed relate first to when digitalis does, and when it does not, increase the amount of urine, and, second, when it does, by virtue of what mechanism this result is brought about. The first problem, whether or not the amount of urine is increased, is a clinical problem and can be definitely solved. In the patients in the group under consideration, it may be stated definitely that no increase in diuresis takes place. It is, of course, remembered that these patients have no edema. The problem as it relates to patients having edema is naturally different, and involves other factors; but in the simplest form of case, no increase in the amount of urine takes place. So far, digitalis cannot be considered a specific diuretic. In experiments the situation is different, because there, although obviously edema is likewise absent, it is almost universally maintained that increased urinary flow takes place. But the clinical and the experimental conditions are not quite parallel, because in the latter, doses which have usually been employed are much larger than normal, that is to say, from three to fifty and more times the lethal dose for man; and because the method is an acute method, for the drug is given intravenously, or under the skin, and the effect is observed under the conditions of surgical operation. But, although the clinical and experimental conditions present results so divergent, it may be interesting to enumerate the theories which are given in explanation of the occurrences observed in experiments, the more in that they discuss factors which must be considered in the diuresis which occurs when digitalis is given in edema. As may have been supposed, three possible explanations have been urged, first that the experimental diuresis depends on a local vascular action in the renal vessels; second, that it depends on the general elevation in vascular blood pressure, and third, that it depends on the increased force of the heart's action. It will be noticed that none of these explanations refers to an action on renal epithelium. But this phase of the discussion of digitalis action scarcely bears on the problem now being considered, and may consequently be dismissed.

We return to considering the effect of digitalis in patients of our group. Diuresis, as has been said, does not occur in any stage of the treatment. When the cardiac effects are clearly discerned, as in the auriculoventricular interval and in the state of the *T* wave, no alteration in output is found. Intake is, of course, maintained level. But later, when dissociation occurs, and gastro-intestinal symptoms have taken place, the output actually diminishes. On account of loss of appetite, and, in some cases, of nausea and vomiting, the fluid intake naturally falls and accounts satisfactorily for urinary decrease. In view of these considerations, the conclusion is justified that a specific effect on urinary output does not occur as the result of giving digitalis to the class of patients under discussion. This, in itself, is not a significant contribution to an understanding of the pharmacology of the drug, but in another place it will be shown that it has an important bearing on the drug's action in edema.

No consideration of the action of digitalis on the various functions of the heart, on rate, on conduction, on contraction, and on circulation, is complete without a reference to the nature of this action. For many years a war of words, the two most prominent of which were "myogenic" and "neurogenic," was fought. This fight was waged on the question of the conduction of impulses in the heart. The battle became a drawn battle; no decision could be reached. Anatomic studies showed that both nerve and muscle elements were inextricably associated in the heart in general, and in the special muscular systems as well. The effort to distinguish the functions of one tissue from those of another became impossible, and the struggle was abandoned.

The same words, "neurogenic" and "myogenic," have in a similar way formed centers around which another battle has been fought, the battle to elucidate the mechanism of the action of digitalis. Fortunately, these battles have been less violent, and the lesser violence was probably due to the fact that it was always more than half suspected that neither one side nor the other was altogether wrong, and, in fact, that both sides were partially right. Our studies, it seems to us, indicate that this is so. So far as atropin may be taken to be a drug acting especially on the ends of the vagi, a release of the heart from a phase of digitalis action by its use indicates a nerve action of digitalis (Fig. 1 *B*). So far as digitalis has other effects, which atropin does not release, it may be inferred that it has an action directed more especially to muscle. Both effects can be observed at the same time, as we have seen, and by virtue of them another struggle, one may hope, has been terminated.

Our studies have, then, led us to draw a number of definite conclusions in regard to the way digitalis acts, and to find new criteria in the *T* wave and in the effect on conduction for detecting when the drug is acting. It seems important to emphasize the fact that it is essential to distinguish differences which patients suffering from heart disease present, and to study them in groups, with these differences in mind. Rhythm certainly offers a prime basis. The effect of digitalis on rate and on a number of other capacities varies with the nature of the disturbed function. In the use of the drug in pneumonia we have found it to have an action essentially similar to that found in the nonfebrile. In the absence of edema, we have not observed a diuretic effect. Evidence has been found which indicates persistence of action, longer than can be accounted for if the drug acts only by virtue of its concentration. We have shown that digitalis has a twofold action on the heart, nervous and muscular. We believe that clearness of indications will result only if the exact mechanism of the action of the drug is ascertained; for only when these are clearly met, can rational treatment be instituted.

NEW METHODS OF PYLOROPLASTY FOR CONGENITAL PYLORIC STENOSIS *

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In recent years, the operation of posterior gastro-enterostomy for congenital pyloric stenosis has become more and more popular. This is largely due to the remarkable results of H. M. Richter of Chicago and Charles L. Scudder of Boston. The former reports twenty-two cases, with only three deaths, which surpasses anything thus far recorded in literature. While it is true that Richter and a few other surgeons who have made a special study of the technic of this operation on infants have achieved wonders with posterior gastro-enterostomy, many of our most eminent and skilful surgeons can claim no such results. All surgeons, even including those who recorded the most brilliant results, will admit that this operation is too much of a surgical procedure for the emaciated and moribund infants who have been brought too late to the surgeon, from failure of early diagnoses, or too long a period of medical treatment. It was an experience with exactly this type of cases that led us into a detailed study of this condition, and in turn caused us to devise the new operative procedure to be described later.

Case 1.—Of two cases which came in February, 1915, to Dr. Abt at the Michael Reese-Sarah Morris Hospital for Children from out of the city, one was an extremely emaciated moribund infant, 11 weeks old, who was treated for an acute gastritis before admission. The child started to vomit at 2 weeks, and continued for nine weeks, up to the time when seen by Dr. Abt. There was also a history of constipation. On examination, a tremendously distended upper abdomen, with the characteristic peristaltic gastric waves, was noticed, and a tumor was felt on palpation. In spite of the moribund state of the child, it was decided to operate, as it seemed the only chance the child had for recovery.. A posterior gastro-enterostomy was performed, with all the precautions as to shock and technic as detailed by H. M. Richter, Scudder, and Downes of New York. The tumor at the pylorus was olive-shaped, about the size of the terminal phalanx of the thumb. On its anterior upper quadrant was a peculiar ridge of muscle extending from the midportion of the tumor to its duodenal end, and which had an appearance similar to a tuberosity on a bone. The tumor was white, anemic in appearance, hard to the touch, and of the consistency of cartilage. We also noticed that exposing the stomach produced not nearly the shock that handling of the small intestine produced. The latter action caused the child to become pulseless, and to stop breathing. When the small intestine was returned into the abdomen, and the operation stopped for a time, the pulse reappeared, and the breathing became regular again. When the small bowel was handled again, the child again went into a complete collapse. The duration of the operation was twenty-five minutes. The patient did well for ten days, when it started to vomit. This continued for thirty-six hours, when the patient collapsed and died.

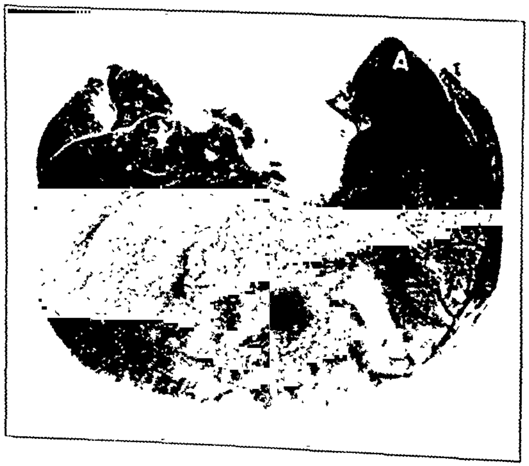

Fig. 1.—Tumor with pyloric ridge (*A*).

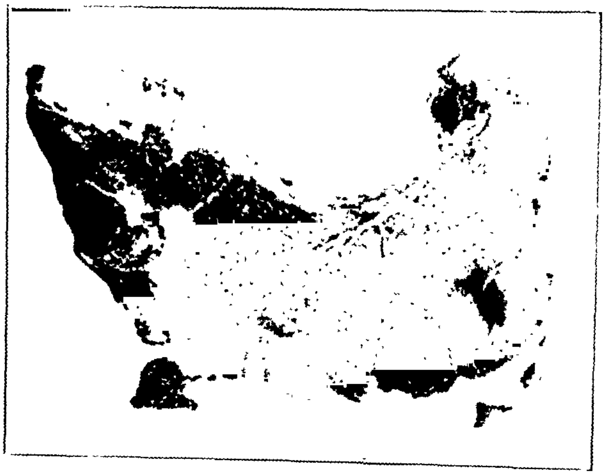

Fig. 2.—Tumor with pyloric ridge (*A*).

Case 2.—The second case was that of a child, 8 weeks old, who had vomited for six and a half weeks, who was also in a moribund condition. Posterior gastro-enterostomy was performed. The stomach was extremely dilated. The pylorus had the typical tumorlike enlargement, with the usual ridges on its upper anterior quadrant. The child went into collapse, and died six hours after the operation. Duration of the operation was twenty-two minutes.

Necropsies.—The necropsies showed that the stomach in both cases appeared to be more the normal size than at the time of the operation. Both stomachs were put through the water test, and both gastro-enterostomies appeared watertight. In the stomach of the first case a 14 F. catheter could be passed through the pylorus, but none in the second case. Both cases had the typical tumor, with its ridge, as described above (Figs. 1 and 2). On cross section (Fig. 3, the pylorus revealed the enormous hypertrophy of the circular muscles, and in some areas also a hypertrophy of the longitudinal muscle, especially where the ridgelike processes appeared (Fig. 3A). The intermuscular connective tissue bundles (Fig. 4) were also enlarged, and seemed to be involved in the process. This coincides with the findings of Dr. Abt, in 1900, and Lewis and Grulee.[1] The mucous membrane was thrown into longitudinal folds (Fig. 5), and was redundant. It was infolded and compressed by the surrounding hypertrophied muscular tissue.

We believe that these congenital pyloric stenosis cases can be divided into two classes:

1. A. Large tumors with almost complete compression of mucous membrane and complete obstruction.

B. Small amount of hypertrophy of muscularis, but with almost complete compression of the mucous membrane, and complete obstruction.

2. A. Large tumors, with only partial compression of the mucous membrane, and only partial obstruction.

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* From the Michael Reese-Sarah Morris Hospital for Children, and the Morris Institute of Medical Research of the Michael Reese Hospital.

[1] Lewis, Dean, and Grulee, C. G.: The Pylorus After Gastro-Enterostomy for Congenital Pyloric Stenosis, The Journal A. M. A., Jan. 30, 1915, p. 410.

B. Small amount of hypertrophy of muscularis, with only partial compression and only partial obstruction.

We believe that many of the so-called *pylorospasms* which are treated medically with good results, but show recurrence of symptoms from time to time even into adult life, belong to the class of hypertrophy, with partial obstruction. Such cases have been recorded by Marie, Russell and Landerer, and some of these have later come to operation.

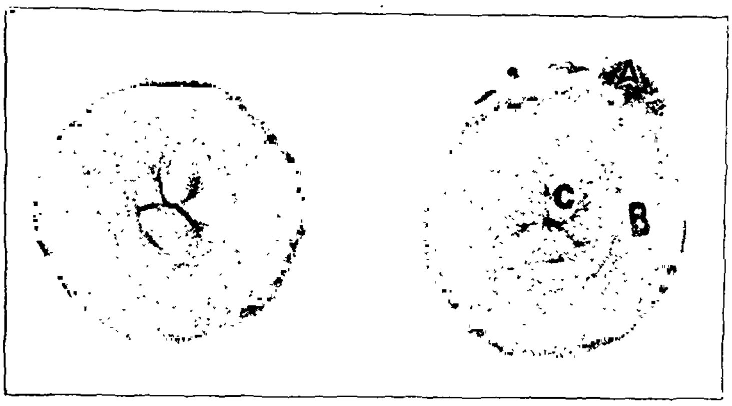

Fig. 3.—Cross section of pylorus; *A*, muscular ridge; *B*, circular hypertrophied muscle; *C*, the infolded membrane.

The new surgical procedures which we have devised are based, first, on the pathology described in the foregoing, and second, on the results from animal experiments.

Ramsteadt, who made a longitudinal incision through hypertrophied muscle, down to the mucosa, and Nicolls, who made a V-Y-shaped incision through the muscularis down to the mucosa, produced only a slight gaping of muscle and herniation of the mucosa at the site of the pylorus. Weber, who modified this slightly by suturing at right angles to the long axis, had not much success, since it was difficult to suture the hard, cartilage-like, hypertrophied muscle in the transverse direction and make it hold. It is evident from Figure 5 that the Ramsteadt, Nicolls and Weber operations produce a hernia on only one side of the pylorus. They do not reduce the infolded mucous membrane, and do not reduce the cartilage-like, hypertrophied musculature, so that the peristaltic waves can pass over the pylorus.

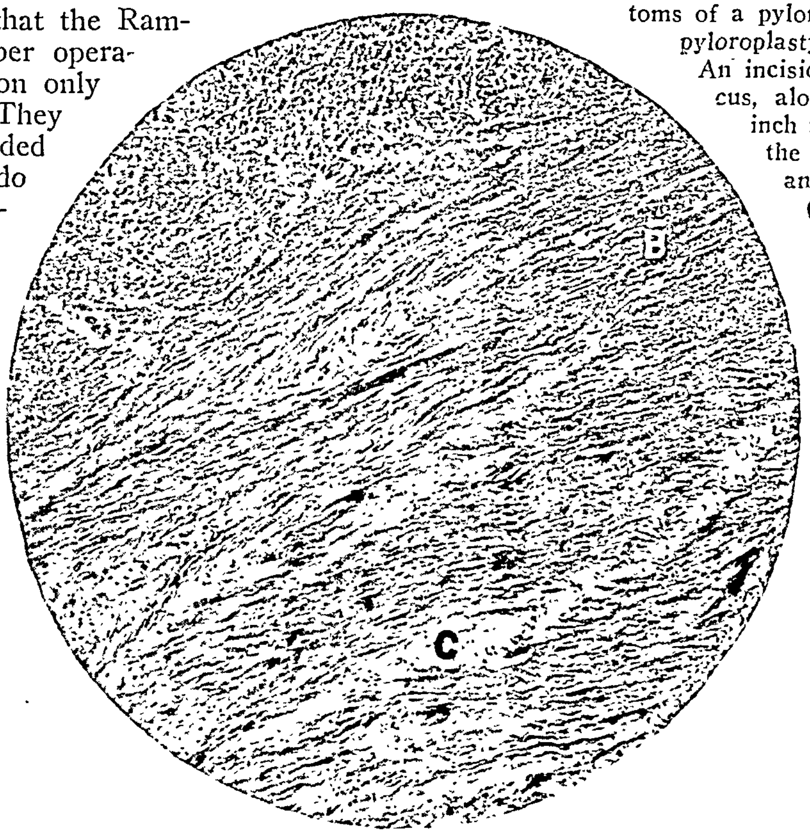

Fig. 4.—B, intermuscular connective tissue bundles; C, hypertrophied muscle.

I have demonstrated[2] how easily the mucous membrane can be shelled out by everting the muscularis. Since publishing the report of this work, I have performed fifty-six pyloric closures, with gastro-enterostomy by this method. By fluoroscoping these animals, we found by separating the mucosa from the muscularis that we would get a paresis of the pylorus, which would last from two to twelve weeks. On the other hand, in a series of animal experiments, a report of which will appear in print later on, in which we resected one half of the circumference, and one half of the length of the pylorus and pyloric antrum, we reconstructed the resected half by two superimposed free fascial transplants. No paresis occurred. To the contrary, this reconstructed pylorus, with its one-half normal intact mucous membrane and muscularis, and its other half of fascial transplants, showed on fluoroscopic examination a perfectly normally functioning pylorus. When the mucous membrane is separated from the muscle, we separate Meisner's from Auerbach's plexus, which probably accounts for the paresis of the pylorus. This is the first essential step in the pyloroplasty. By cutting down to the mucosa and shelling it out, we reduce the folds of the infolded mucous membrane (Fig. 5), and produce a paresis of the spastic pylorus. The second part is to reconstruct the hypertrophied musculature to its normal thickness. This can be performed by either cutting away the inner circular layer, or utilizing it as a plastic flap, as will be shown in the following steps in four cases operated on by this method.

1. TYPE A.

Case 3.—A baby, aged 3½ weeks, was admitted to Dr. Abt's clinic at the Michael Reese-Sarah Morris Hospital for Children, with all the typical signs and symptoms of a pyloric stenosis. Operation of a pyloroplasty was performed, as follows: An incision, 1 inch above the umbilicus, along the right rectus, and 1 inch in length, was made through the skin. This was retracted, and a slight curved incision (Fig. 6) was made through the anterior sheath of the rectus. This was carried through the abdominal wall to the peritoneum, and the peritoneum opened. A fine gauze sponge was placed immediately into the abdomen to prevent evisceration. A fine catheter was now passed by mouth into the stomach to allow the collapse of the enormously distended stomach. A small retractor was placed in the right side of the incision, and slow traction was made. With the index finger hooked into the lesser curvature near the pylorus, I was able to deliver the hypertrophied pylorus into the wound without bringing any other portion of the stomach or bowels into the wound. The pylorus was now grasped between the thumb and index finger (Fig. 7) and a longitudinal incision was made over the upper anterior quadrant of the pyloric tumor, and slightly beyond each end of it, down to the mucosa. If one should hesitate to use the sharp scalpel here, for fear of injuring the mucosa, he could make a superficial incision into the tumor and divide the deeper portions to the mucosa, with the handle of the scalpel. The hypertrophied musculature cannot be everted so easily as described in pyloric closure, but one side of the musculature can be grasped with fine gauze by the assistant, while the operator makes pressure with the thumb and index finger from below. Then a Kocher dissector, with the aid of the scalpel, was used to free the mucosa from each side of the divided muscularis until it was almost completely shelled out. The mucosa separates very easily; in fact, much easier than it does on the normal pylorus, either human or animal.

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[2] Strauss, A. A.: Two New Methods of Closure of the Pylorus for Pyloric and Duodenal Ulcer, The Journal A. M. A., Oct. 31, 1914, p. 1525.

The muscularis was now everted as much as possible, and a very fine scalpel (Fig. 8) was used to divide the muscle tumor longitudinally into two layers of equal thickness, a deep and a superficial, and the incision thus made was carried lateralward by a specially constructed angle knife almost to the edge of the divided muscle tumor. This newly made flap was everted (Fig. 9). The opposite side was then treated in the same way. The everted edges were closed with No. 00 fine waxed *silk interrupted* sutures (Fig. 10). A small piece of free transplant from the great omentum was sutured with four interrupted waxed silk sutures over the pylorus to cover the raw surfaces (Fig. 10, inset).

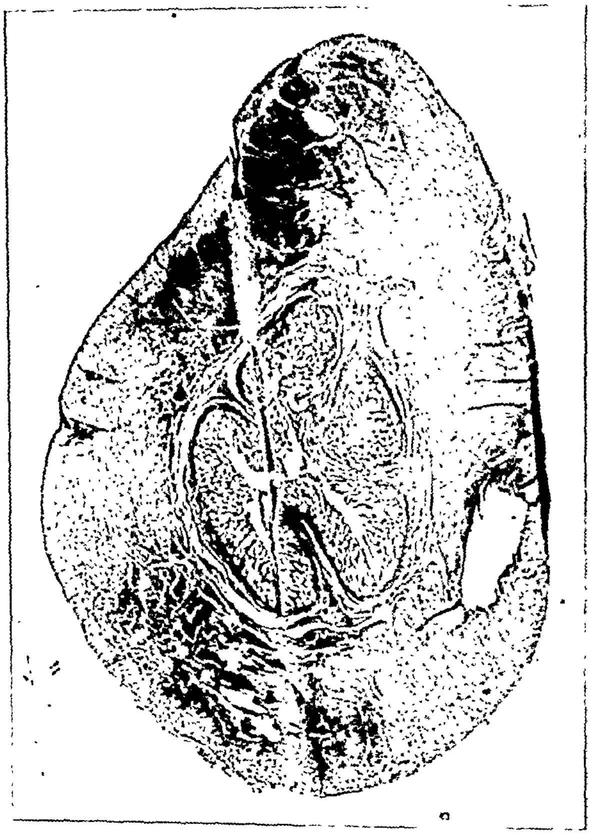

Fig. 5.—Photomicrograph; *A*, hypertrophied muscle; *C*, infolded membrane.

We now had a reconstructed pylorus, with about the normal thickness of muscle, and plenty of room for the unfolded mucosa. The entire operation did not take over ten minutes, and seemed to be devoid of shock. The abdomen was closed with a slight imbrication of the walls, as one would use in an inguinal hernia. Interrupted chromic catgut was used. Two *tension* sutures of heavy waxed silk also were used. I believe the imbrication will prevent hernia and evisceration. The patient was now turned over to Dr. Abt for the after-care. He made an uneventful recovery, was given water a few hours after the operation, and mother's milk in twelve hours. He quickly gained in weight. There was no vomiting, no gastric peristalic waves were to be seen, and the patient had normal bowel movements. The patient was fluoroscoped and roentgenographed at the end of twelve weeks. The pyloric function was normal, and the emptying time of the stomach was normal. The patient is now far beyond his normal weight for a baby of that age.

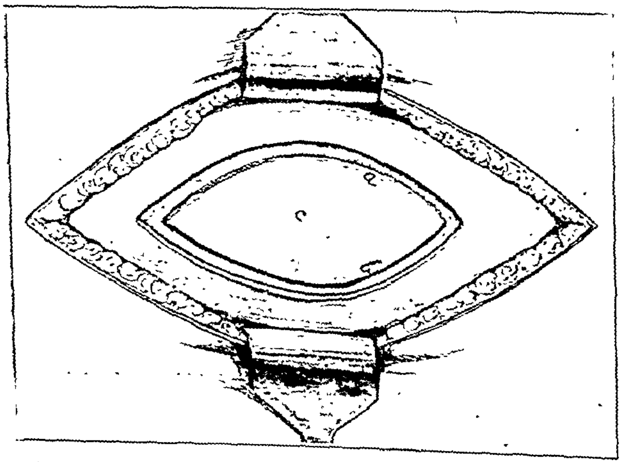

Fig. 6.—Incisions: *a*, first incision; *b*, second incision; *c*. sheath of rectus (anterior).

Case 4.—With my colleagues, Dr. George L. Davenport and Dr. Julius Hess, I saw a second case with all of the characteristic symptoms and signs of pyloric stenosis. I persuaded Dr. Davenport to try the above-described method. He very cheerfully permitted me to direct the steps of the operation. Local anesthesia was employed. The operation was performed by him with perfect ease in ten minutes. The patient was turned over to Dr. Julius Hess for the after-treatment, made an uneventful recovery, and is gaining weight rapidly. No gastric peristaltic waves could be seen following the operation.

Cases 5 and 6.—In a third and fourth case which came to Dr. Abt, operation was performed in the same way, and the patients were turned over to Dr. Abt for the after-treatment. Both have made uneventful recoveries.

1. TYPE B.

When the hypertrophy is very marked, we shell out the membrane, but instead of making a plastic flap of the tumor we remove the larger portion of the inner circular muscle. This procedure we have performed thus far only experimentally on dogs.

SECOND METHOD

When there is a small hypertrophy of the muscle tissue with almost complete compression of the mucous membrane, we make a second curved incision (Fig. 6 *b*) through the anterior sheaths of the rectus, and remove the oval flap with some of its muscle. After freeing the mucous membrane of the pylorus, we insert this free fascial transplant, as in Figure 11, which is covered with a free transplant from the great omentum with four interrupted fine silk sutures. This method has been performed on ten dogs, which were

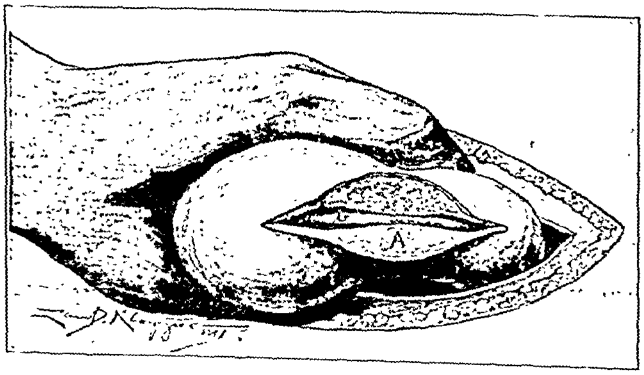

Fig. 7.—*A*, muscle tumor; *B*, the mucosa.

later fluoroscoped and roentgenographed, and killed at the end of six months. The pylorus was functionating normally, and the transplant organized without any cicatrization (Fig. 12). There seems to be a slight compensatory dilatation of the stomach wall opposite the transplants.

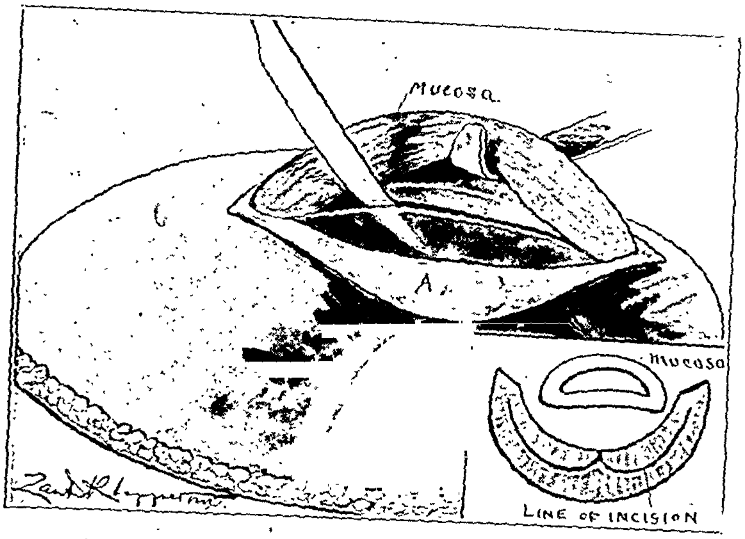

Fig. 8.—*A*, muscle tumor; *B*, internal layer of muscle; inset, transverse section.

ETIOLOGY

As regards the etiology of this condition, there are two views: first, that it is a congenital hypertrophy which later produces the spasm; and, second, that it is a physiologic hypertrophy, produced by the hypermotility and spasm of the musculature of the stomach. In order to answer this question, Dr. Abt and I are conducting some animal experiments at the Morris Institute for Medical Research of the Michael Reese Hospital. The basis on which we are working is as follows: If this condition is a physiologic hypertrophy produced by hypermotility and spasm, we ought to be able to reproduce it by producing spasm and hypermotility, and if this physiologic effect does not produce a hypertrophic tumor, such as we find in congenital stenosis, it would speak highly for the congenital origin of this condition. To prove this, the following experiments were performed:

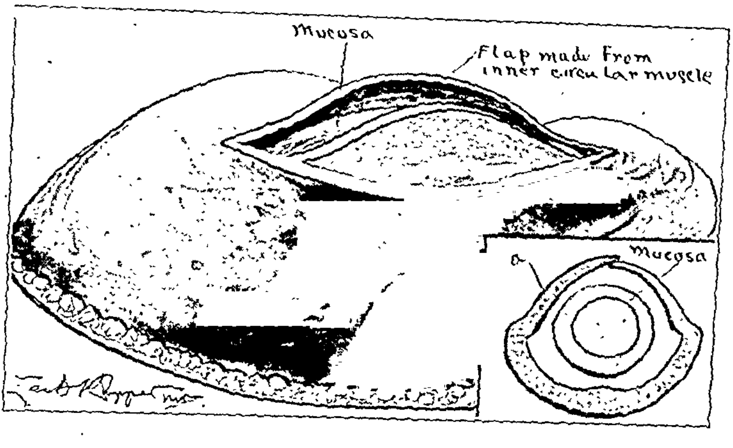

Fig. 9.—Muscular flaps turned out; inset, transverse section: *a*, muscularis.

Several groups or series of young dogs, from 6 to 10 days old, were used. The pylorus was exposed and the mucosa shelled out for half of its circumference. A fine free fascial transplant was sutured to the partially shelled out mucosa and sutured so as to produce the infolding, such as is seen in Figure 5. This infolding produced an obstruction which would barely allow a fine probe to pass through. In other words, we tried to reproduce the pathologic condition as found in congenital pyloric stenosis. The animal vomited, and had hypermotility and spasm, but no tumor developed.

On a second series of animals the foregoing experiment was performed, plus the cutting of the splanchnic nerves.

On a third series now being done the same experiment is being reproduced, plus stimulating the vagus nerves. This part of the experiment is accomplished by placing two fine insulated sterile wires around the vagus nerve and allowing them to come through the wound. In this way we are able to stimulate these nerves and produce a hypermotility as often as we care to do so.

On a fourth series of animals, after the stomach was opened, a foreign body was placed into the pylorus of sufficient size so it could not pass through but would allow a small amount of food to go through the pylorus. This foreign body was so sutured that it could not be regurgitated back into the stomach.

All of the experiments just mentioned are in addition to some others which will be described in detail in a later paper. They all produced hypermotility, vomiting and some spasm, but no hypertrophy of the pyloric muscles, such as is seen in congenital pyloric stenosis.

These experiments certainly speak highly for the congenital origin of this condition. Coutley, who found a pyloric stenosis in a 7-month premature infant, also speaks highly for this view.

Those authors who set forth the argument that, if it was congenital, the symptoms should start at birth, and not two or three weeks after birth, can be answered in the following hypothesis: The new-born infant for two or three days after birth gets but a few drops of colostrum, and a very small amount of milk. That the amount of milk in the first two or three weeks only gradually increases, we also know. We believe that like all other internal organs, and like other physiologic functions in the body, the stomach does not reach its full physiologic limit, especially as to motility, until that time. That is to say, the newly born infant has a very small amount of muscular activity, but this physiologic action is gradually developed and does not reach its full limit until two or three weeks after birth.

We are now carrying out some fluoroscopic examinations of newly born infants to prove this point. In a child born with a congenital hypertrophy, if such is the case, the slight opening left in the pylorus is sufficient to allow the undeveloped peristaltic waves of the first few weeks to force the food through, but the constant high tension to which the musculature of the

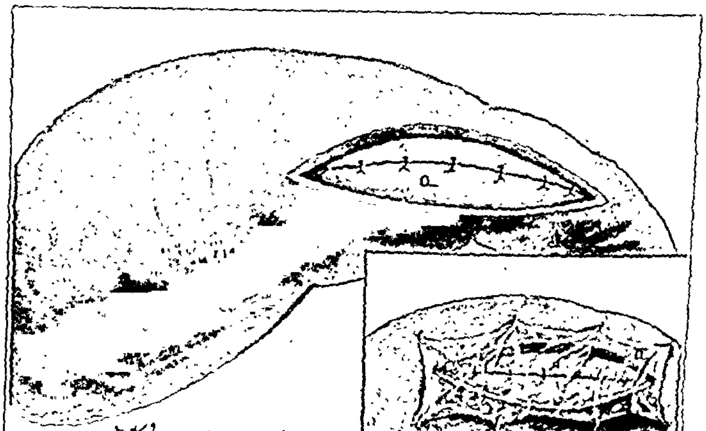

Fig. 10.—The newly made muscle flap sutured; inset, *a*, free transplant of great omentum covering field of operation.

stomach is forced finally throws it into a spasm which helps to close the pylorus, and produces all the subsequent characteristic symptoms.

We believe that one of the greatest arguments against the physiologic origin of this hypertrophy is that in a physiologic hypertrophy that portion of the stomach which undergoes the greatest muscular activity would show the greatest amount of hypertrophy. It is well known, from a mechanical standpoint, that there is less muscular motion immediately in the region of the pyloric ring where this tumor occurs than there is in the antrum of the pylorus, where the muscular movement of the peristaltic waves is greatest. If this is true, the tumor should appear in the antrum rather than at the place where it is found. It is also very hard to conceive that this tumor should not have a gradual ending on the antrum and on the duodenal side, if it is due to the physiologic hypermotility and spasm, whereas, as a matter of fact, it ends abruptly. It is also contrary to any knowledge we have of conditions in other parts of the body, and the rate of tissue growth, that such a tremendous amount of hypertrophy should be produced as we have seen in infants who were operated on at the end of one week after birth.

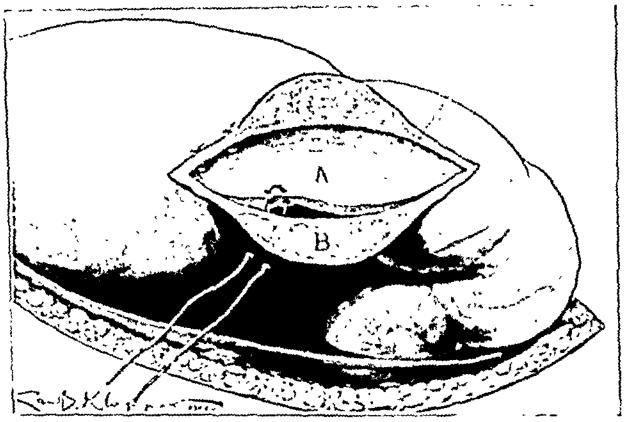

Fig. 11.—*A*, fascial transplant from anterior sheath of rectus; *B*, muscle tumor.

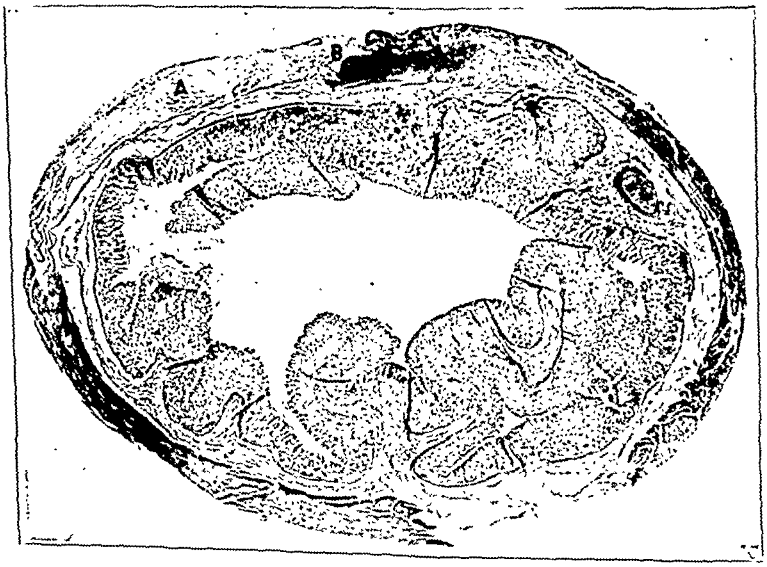

Fig. 12.—*A*, fascial transplant; *B*, union of transplants with muscular tissue; *C*, mucous membrane.

CONCLUSIONS

The advantages of the above-described methods of pyloroplasty over posterior gastro-enterostomy are:

1. The incision required is very small, in contradistinction to that necessary in performing posterior gastro-enterostomy — large enough to deliver the partially distended stomach, transverse colon, and then to find the right loop of jejunum.

2. Those who have performed gastro-enterostomies in these infants will appreciate the saving of a tremendous amount of shock thus secured.

3. The methods of operative procedure described cover every form of pathologic condition so far found in congenital pyloric stenosis.

4. The operations reconstruct a pathologic pylorus to a more normal pylorus, particularly as to its lumen and enormous thickness of musculature.

Finally, the normal anatomic relation of the stomach to bowel is preserved by the pylorus remaining the normal connecting tube between stomach and duodenum. The developing liver and pancreas in the infant, which we know from experiments in physiology are stimulated reflexly by food passing through the duodenum, must certainly be considered in a more normal condition here than with a closed-off pylorus, as occurs after a posterior gastro-enterostomy.

Moreover, the duration of the operation is one-third the time taken by posterior gastro-enterostomy.

The most important fact regarding this operative procedure is that these children come back from the operating room with no more shock than from the smallest minor operation. The projectile vomiting has ceased, no peristaltic waves are seen, they take their nourishment, and do not appear ill at all, as one would expect from an abdominal operation.

30 North Michigan Ave.

A Unique Work for Tuberculous Children.—The annual report of the North American Children's Sanitarium for 1914-1915 gives a history of the movement started in 1901 for the relief of poor children in Philadelphia during the hot months of summer. Since then this movement has been supported almost entirely by what has become a seasonal feature of Philadelphia life known as "porch parties." After a few years a seaside sanatorium for the treatment of tuberculous children was founded and much good has been done. The active and consulting staff of the sanatorium includes a large number of the more prominent surgeons and physicians of Philadelphia and Atlantic City, where the sanatorium is located. Prior to 1914, the sanatorium was supported wholly in the manner stated above with the assistance of the newspaper which founded it. In 1914, owing to the war, the income of the sanatorium fell off to such an extent that it was felt that it would have to be partially closed down, but an appeal made to the public by the newspaper, supplemented by the surgeons who compose the executive staff, resulted in very gratifying contributions which enabled the managers to keep the hospital open to its full capacity of thirty-six beds and even to increase it to forty-five. Substantial and commodious buildings completely equipped for treating particularly surgical tuberculous affections in children are owned by the sanatorium management. Since the sanatorium opened in 1910, 150 children suffering with tuberculosis of the bones and joints have been admitted. Of these, 114 have been discharged and thirty-six still remain.

OXYCEPHALIC EXOPHTHALMOS

WITH TRAUMATIC RUPTURE OF BOTH EYES *

RALPH A. FENTON, A.B., M.D.
PORTLAND, ORE.

Tower skull is so generally associated with mental deterioration that such patients are rarely studied by the ophthalmologist, but drag out a miserable institutional existence. The case herewith reported presents an unusual combination of unaffected mentality with the most excessive deformity, and the severest ocular complications.

A. L., white man, aged 47, parentage American for several generations, has had four brothers and four sisters; all relatives are long-lived, strong, healthy and of large frame. This man stands 6 feet 2 inches, and if his shambling, bowed posture were straightened he would be 2 or 3 inches taller. His hands are large and knotty from manual labor, his feet very large, splayed outward and flat. He has a characteristic "pituitary" slouch forward of the neck between the shoulders, and his gait and posture in walking are gorilla-like. He is unmarried, but considers his sexual powers normal; the sexual organs are of normal size and development.

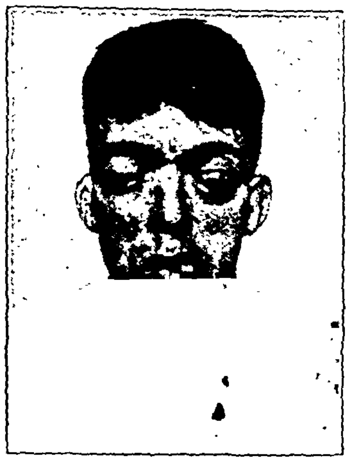

Fig. 1.—Front view, before rupture of left eye, after lid repair, December, 1914.

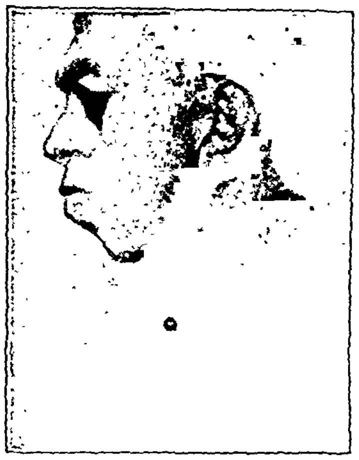

Fig. 2.—Side view, same time as in Figure 1.

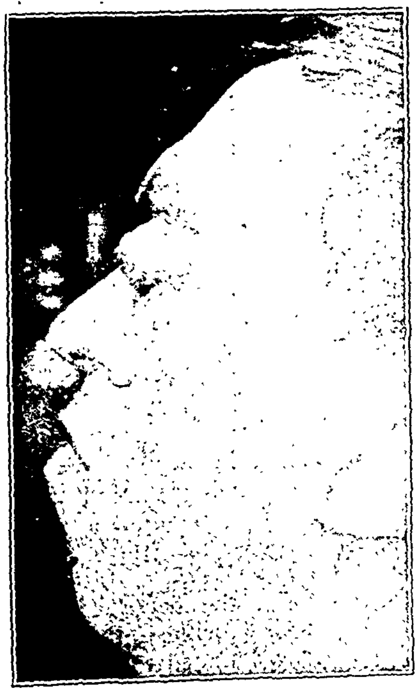

Fig. 3.—Side view, after rupture had healed, February, 1915.

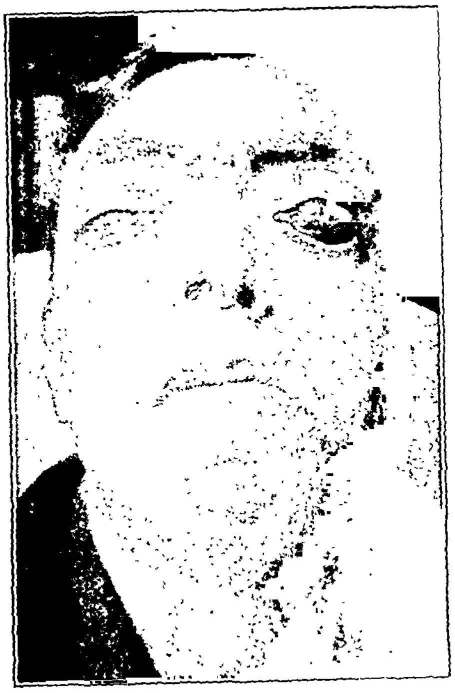

Fig. 4.—Front view, same time as in Figure 3.

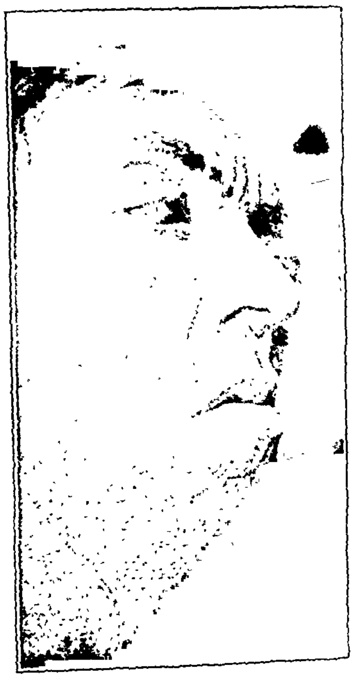

Fig. 5.—Three-quarters view, same time as in Figures 3 and 4; the left eye in this view projects as far as the nose.

His vision was somewhat defective in childhood, so that he did not go to school much; and his peculiar head and ugly face aroused cruel comment and made him rather shy and retiring. He was brought up on a farm, and since maturity has done various sorts of heavy work in lumber camps and in land clearing. When 39 his right eye was torn open and blinded by a flying fragment of a broken claw hammer. His general health has always been excellent, save for an attack of measles at 40, from which he was in bed for four days, and after which his sight failed somewhat. Previous to that time he had always been able to read newspapers in comfort, but within a few months his vision was reduced to the large headlines.

The remaining (left) eye seemed to protrude more and more after this attack of measles, and he had several severe corneal ulcers, which healed with much scarring and visual loss. The increasing exophthalmos, probably now due to the postfebrile softening of the sclerocorneal coat, and consequent lengthening of the globe, pushed the lower lid down more and more, and finally everted it altogether.

For this complete ectropion he came to us in November, 1914. The Ziegler cautery puncture was extensively made at one sitting under cocain, with rather pronounced reaction; the eye was kept open and filled with petrolatum, and after four weeks the scarring had restored the lid margin into contact with the globe. At this time refraction was attempted, and it was found that vision had improved with correction of the lagophthalmos from 2/200 to 5/200; — 7.00 sph. $\bigcirc$ — 3.00 cyl. ax. 180 degrees gave 12/200, but this was not prescribed at that time; he was cautioned to wear protecting goggles but neglected to obtain these.

January 10 he was brought in with the lids enormously swollen, conjunctiva chemotic and anterior chamber full of blood. The eye had been struck by a flying branch, rupturing the sclera subconjunctivally, just back of the limbus and in front of the internus insertion. Vision, light perception. He was put to bed, with iced compresses and atropin; a slow iritis was gradually controlled, and he went home in four weeks with about the same vision as before the accident. There is a slight increase in the photophobia which had annoyed him ever since his attack of measles.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The present condition, then, as shown in Figures 1, 2, 3, 4 and 5, is a total exophthalmos of both eyes, the globes lying outside the anterior margins of the orbit. The right eye is flattened, shrunken, small cornea, vision nil. Left eye, buphthalmos, conical cornea with transverse leukomas; conjunctiva thick and grayish, lids thickened and drooping, but not everted; pupil large, irregular, transversely oval, and disappearing behind the nasal limbus at the site of the recent scleral rupture; at this point lies an extruded patch of uveal pigment. There is divergent strabismus of about 10 degrees; all rotations are limited and difficult; he moves the head instead of the eye. The upper lid is held down voluntarily in the ptosis position to shade the pupil. Vision has come up to 10/100 and photophobia and conjunctivitis are much lessened since March, under —4.00 cyl. ax. 60 degrees, medium smoke tint, constantly worn.

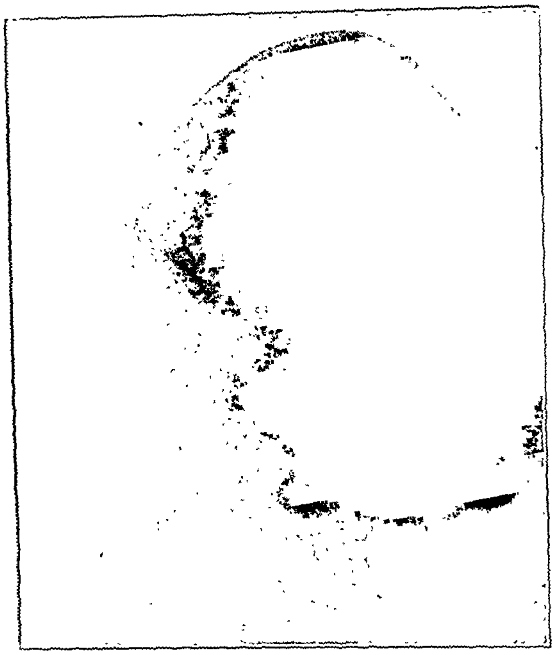

Fig. 6.—Lateral roentgenogram.

There is moderate septal deviation without obstruction, and no nasal discharge is present. The palatal arch is characteristically high, and the teeth in both jaws incline forward, occlude badly, and are much decayed.

The ears are large, but very thin, approaching the Morel type. Partial ossification of the lobular and meatal cartilages has taken place on both sides. Hearing is normal.

In Figures 6 and 7 we note especially the pointed vertex; the triangular form of the enormous skull; the grooves of the frontoparietal convolutions on the inner surfaces of those bones; the apparently normal sella impinging by a thin wall on large sphenoidal sinuses; the lowering and shoving forward of the orbital roof from a horizontal position to an angle of 45 degrees; the large open frontal sinuses, and the almost simian degree of prognathism.

With all this deformity we should expect mental deficiency, occasional motor pareses, or jacksonian attacks; but such things have never occurred. This man is heavily muscled and surefooted, a thorough and capable workingman within his visual limitations, well-informed beyond his opportunities, very fond of good music, kind and neighborly but very shrewd.

Generalization on a single case is fraught with fallacy; yet may it not justify us in revising a little the gloomy prognosis of clouded mind and useless life that attends the birth of such a child? The eye deformity suggests obvious measures of protection, and more than the usual caution should follow up the acute infectious diseases. Nor need we always assume the presence of hypophysial cysts or tumors. This man's large frame is common to all his family. Probably pressure has somewhat modified the activities of his chromaffin system, but he presents none of the dystrophy of the adiposogenital type and none of the cerebral hebetude which authorities lead us to expect.

I would ask the section's opinion whether early double subtemporal decompression might not save such cases from this gruesome catalog of complications. This would be worth the risks incurred, even if it could not, as here, save the alert mind of this unfortunate man from its lifelong incarceration behind so hideous a mask.

801 Stevens Building.

ABSTRACT OF DISCUSSION

Dr. Harold Gifford, Omaha: The photographs of this case give a fine representation of what Virchow called *Spitzkopf*. For some reason this term has been almost altogether displaced in Germany by *Thurmschädel*, our English equivalent being peaked or tower skull. A Greek term like oxycephaly is preferable to these expressions from the vernacular, which often call up an entirely erroneous picture, since it can be used entirely without prejudice as to its real meaning. The fact is there is a great deal of confusion as to the type of skull indicated by these terms. In Germany *Thurmschädel* is generally used to designate a skull which is flattened in front but which runs well out to the rear with a prominence at the site of the superior fontanel; this type being the result of the too early closing of the coronal suture. The typical *Spitzkopf*, such as is shown in the case of Dr. Fenton, is *probably* caused by the premature closure both of the coronal and the lambdoidal sutures with resultant flattening both in front and behind. Whether the [illegible] of the optic canal

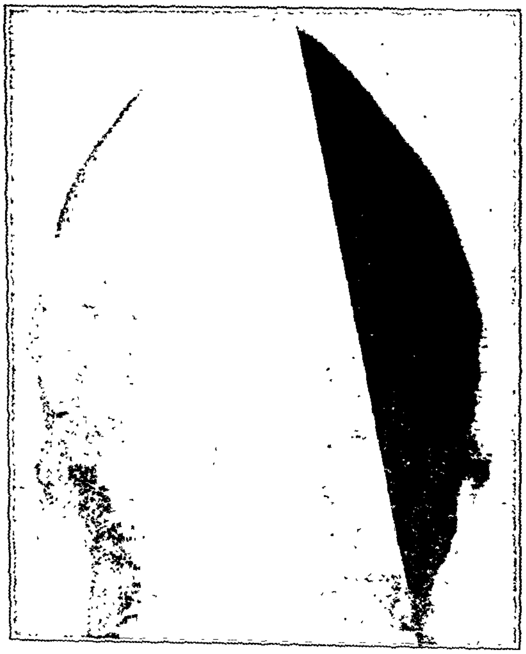

Fig. 7.—Frontal roentgenogram.

which was first observed in these cases by von Michel, is due to the pressing downward and forward of the superior orbital plate or whether the atrophy of the optic nerve is first caused by intracranial pressure, and the narrow optic canal is simply a lack of development corresponding to the small size of the nerve, is a matter of dispute. Following the idea that the displacement of the orbital plate is the main cause of the atrophy, Schloffer has opened the cranium, raised the frontal lobe and chiseled off the superior wall of the optic canal. In the two cases in which he has performed this operation, the visual results have been practically zero; and this is really what we should expect since the injury to the sight in these cases is nearly always produced in early childhood or infancy, and has generally reached the stationary point by the time that most of them are brought to the oculist for treatment. I believe that by keeping in mind the possibility of premature closure of the sutures as the cause of poor sight in infants and children, we might, by early decompression operations, do some good in many cases which hitherto have been allowed to go without treatment until it was too late. Luckily such exophthalmos with resultant corneal ulceration as is shown in Dr. Fenton's cases is very rare, as is the occurrence of ectropion; in fact the only other case of ectropion that I know from oxycephalic exophthalmos is one reported a few years ago by my colleague Dr. Patton. The excellent mental development which Dr. Fenton notes as remarkable in such an idiotic looking individual has been noted by other authors; in fact, but one in twenty of these unfortunate oxycephalics shows marked mental deficiency. This undoubtedly means, as Virchow pointed out, that peculiarities in the shape of the skull have much less influence on the development of the brain than is commonly supposed. An otherwise healthy brain adapts itself to the new conditions and finds room for its growth in other directions, while the poorly developed brain of the microcephalic idiot is the cause, not the result, of its peculiarly shaped skull.

Dr. **Edward Jackson**, Denver: Since tower skull or oxycephaly began to attract attention in connection with visual disturbance, I have looked for these cases, but I have seen no case of disturbance of vision with very marked skull deformity. I think these cases must be distinctly rare outside of some parts of Europe. Records have been based on a number of oxycephalics in a blind asylum. Dr. Gifford has brought out that the disturbance of vision comes very early in life. The stage of optic neuritis which precedes the optic atrophy is always in early childhood. There are practically no records of such cases except when children were brought into the asylum for the blind very early. As has been pointed out, many cases have shown marked narrowing of the optic foramen. It seems to me much more probable that the essential deformity, the original deformity, is rather in the bones at the base of the skull than in the union of the sutures of the vault. The thickening of the bone leads to the narrowing of the foramen. Trephining has been done too late in life to hope for any good results. We have more to hope for in these cases in the direction of internal secretions than we have from operative interference early enough to be of any benefit.

Dr. **Ralph A. Fenton**, Portland, Ore.: In regard to the protection of the eyes, this man found bandage pressure extremely painful. It was almost impossible to interfere with the upper lid of the eye in which he sees; so we have protected his eyes by keeping them filled with white vaselin. He does a good deal of work now out of doors where it is dusty. This man happens to be an exception to the general rule. His blindness is a result of ulcers instead of pressure on the optic nerves.

MALIGNANT TUMORS IN AND AROUND THE ORBIT

WITH REPORT OF STARVATION METHOD OF TREATMENT *

E. H. CARY, M.D.

Fellow of the American College of Surgeons

DALLAS, TEXAS

Since the starvation treatment of malignant growths of the upper neck and face has undoubted value, ranging from prolongation of life to a cure, depending on the nature of the case, amount of involvement, age of the patient, character of the operation, etc., I have been led to say a word on the subject and report the twenty-two cases in which operation was performed during the past nine years, two of which were nonmalignant tumors of special interest in which ligation seemed necessary. These cases follow Nos. 1 and 2, in which the patients were not operated on.

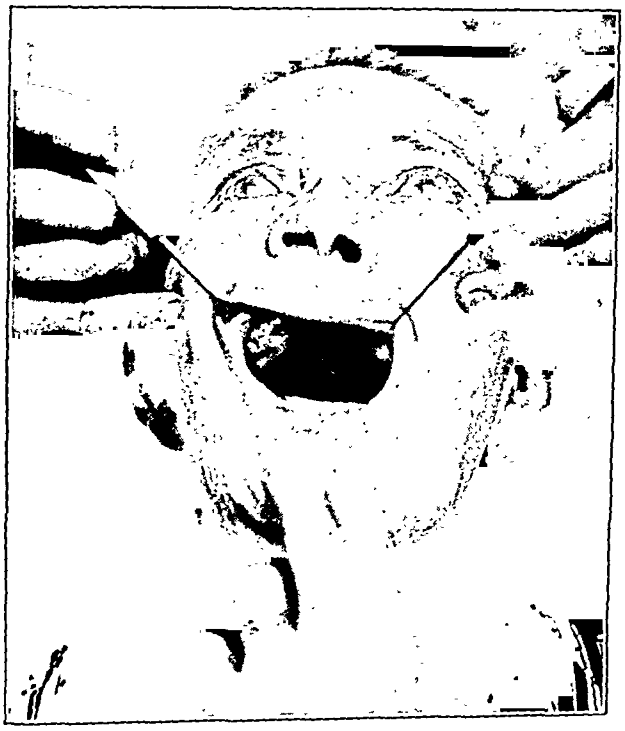

Fig. 1 (Case 3).—Sarcoma of the roof of the mouth. Picture taken May 8, 1908, operation April 20, 1907. At that time tumor was as large as an egg, the nose was closed and the cheeks swollen.

Robert H. Dawbarn of New York must be credited with the employment of the idea of starvation for malignant growths in the parts described, inasmuch as he has pointed out the numerous anastomoses of the external carotid artery, and suggested excision after tying each branch of the artery in an attempt to destroy permanently all such connections. He has further shown how futile is any attempt at starvation when the external carotid of the other side is permitted to remain.

My own experience has been so consistently in line with his that it seems worthless to report, unless it may serve to call attention to cases looked on as hopeless, yet not entirely so, and thereby enlist workers here to give that aid which can be given in many cases in which the patients are frequently encouraged to refuse any and all surgical attention.

HISTORICAL

It might be well here to go briefly into the history of ligation for malignant tumors and beg you to keep in mind the difference between ligation and excision.

In regard to the external carotid from the tables of Madelung and Lipps, it was tied for a tumor of any sort about 1830—it was not applied for outspoken malignancy until about 1854, at which period Maisonneuve endeavored to give the method a fair test. He performed unilateral and bilateral ligature collectively seven or eight times, securing no benefit from the procedure. The growths were all cancers of the buccal cavity, tongue and pharynx. Then follows a case of Lannelongue in 1873.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

The next record of ligation of external carotid for starvation purposes was by Dr. Joseph D. Bryant,[1] in 1887. Tuffier, a French surgeon, in 1897 reported three cases; all of these were ligation, none attended by favorable result.

Following this came the masterly essay by Dawbarn, winning the Gross prize in 1902, reporting eighty-three operations of various surgeons on forty-eight patients, over a period of eight years, all practicing his operation of ligation on both sides of each branch of the external carotid with excision, with a tabulated list of cancer twenty-four, sarcoma twenty, no definite report, two, angioma two.

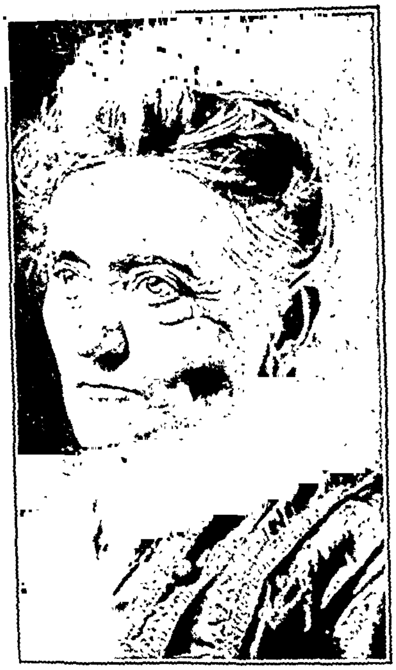

Fig. 2 (Case 5).—Sarcoma. Scar after removal of tumor, which displaced eye outward and upward.

In cases of cancer, life was prolonged for seemingly a short time; the tumors usually showing lack of activity for a few months. In the twenty sarcoma cases, the record was truly remarkable, especially when you understand that these cases were all hopelessly involved and rapidly approaching an end. Out of twenty cases—they being ward cases—only eleven could be traced; one of these was a tumor of the orbit, and the operation was supposed to be of no value, inasmuch as the blood supply is also derived from a branch of the internal carotid. Dawbarn had but two recurrences out of the remaining ten. Taking the three-year limit as a radical cure, he had four definite recoveries out of eight cases which survived the accidents of the first year, these being all far advanced and considered hopeless and ineradicable sarcomatous masses.

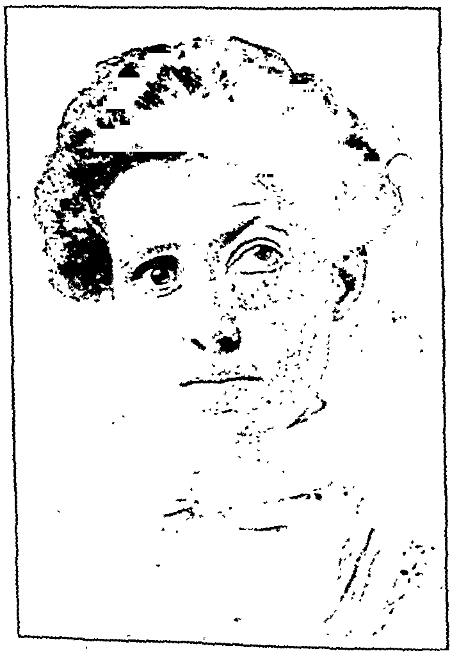

Fig. 3 (Case 7).—Melanosarcoma.

Dawbarn's cases are grouped into three classes in which the excision of the external carotid may be performed:

1. "Those where excision of both external carotid, and to avoid deformity, leave an operable tumor in place, thereafter depending on a closely and regularly maintained observation of growth for a period of years."

2. "Cases where the growth is operable and consequently excised."

3. The third class would comprise those whose cancer is already ineradicable, involving, for example, the base of the tongue, the floor of the mouth, and pharyngeal wall; here nothing is done to the growth, but all lymph nodes are removed in the path of the operation for excision.

First, I shall report two cases typical of others, occurring when the starvation treatment of excision was not practiced.

Case 1.—A sarcoma, involving the antrum on the left side, occurred eleven years ago in my practice. I have never forgotten this big, strong Norwegian, whose life was rapidly destroyed in spite of all that we did. The left side of his face became a tumor mass, sapping his life. The man died after an illness of only three months. The laboratory report showed small round-cell sarcoma. In this case ligation and excision were not practiced.

Case 2.—Another patient was sent to me from Mangum, Okla., ten years ago, with a history of eight years before having sustained a kick from a horse, which broke the nose, changing its relative position, markedly deviating the septum, and blocking the fossa of the right side so that it was impossible for the patient to breathe through the passage when suffering with the slightest cold. Two weeks before coming to me he had developed what seemed to be a maxillary sinusitis with swelling of the right side of the face with more or less discharge from the right nostril. The pain had been so acute that a dentist had extracted all of his teeth, thinking that this would relieve him. His physician was called in and recognized what appeared to be a polypus in his nose and advised him to come to me. I found an immense polypus growing from the ethmoidal membrane, filling the cavity of the nose and extending into and filling the postnasal space. It appeared benign and was promptly removed.

A day or two later an Ash operation, as practiced at that time, was done on the septum. It was straightened, complete drainage established and a favorable prognosis given. It was not long before I found my mistake, for from all surfaces there rapidly appeared new growths; even in the vault of the pharynx nodular masses appeared. A section of tissue was sent to a pathologist for examination, and the whole mass thoroughly removed. Microscopic examination confirmed the belief that it was sarcoma, and was of the round-cell variety. The ethmoid cells commenced to break down, and the right eye protruded and was pushed to the right side. Pain became intense and it was necessary to establish drainage through the inner canthus to the ethmoidal cavity.

Believing the most radical operation of no service, I advised the patient to return home. He went home and the next day, to St. Louis, where he was operated on, dying in two or three days. Ligation and excision were not performed.

These two cases are typical of others in and around the orbit observed by me, in which the disease invariably made rapid progress and the patients died early, regardless of the most complete removal of the tumor, wherever located.

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[1] Bryant, J. D.: Med. News, 1887.

I shall now briefly discuss eleven cases of sarcoma occurring in various parts of the face and neck, with nine cases of carcinoma, along with two other cases, one being adenoma of the tongue and submaxillary space, and the other, a teratoma of the soft palate. I shall not go into details, for much of the history would be tedious and necessarily of little scientific value. In all of these twenty-two cases, ligation and excision were practiced.

SARCOMA CASES

Case 3.—Mrs. D., aged 62, had a sarcoma of three years' growth, involving both antrums. When I first saw her, both of her cheeks were markedly swollen, and she was unable to breathe through her nose. Her mouth being open, a tumor about the size of an egg could plainly be seen, involving the roof of the mouth. The patient had lost in flesh and strength, and it seemed that she could not survive a week. April 20, 1907, the external carotid and branches were ligated and excised on the right side, and two weeks later on the left side. The patient rapidly improved and the tumor diminished sufficiently for her to breathe through the nose. The hemorrhages ceased. The gums receded. The egg-shaped tumor in the roof of the mouth subsided, and the pain, which had been excruciating, disappeared. May 8, 1908, she was seen and we were unable to find pulsation in any of the arteries which had been excised. Figure 1 was taken on that date. The patient went to the county poor farm, and we have a record of her death, three years after the operation, from pneumonia, having lived with her tumors in a fairly comfortable manner, being given opiates for whatever pain she had. There was a pathologic report of the section, but the sarcomas were not disturbed.

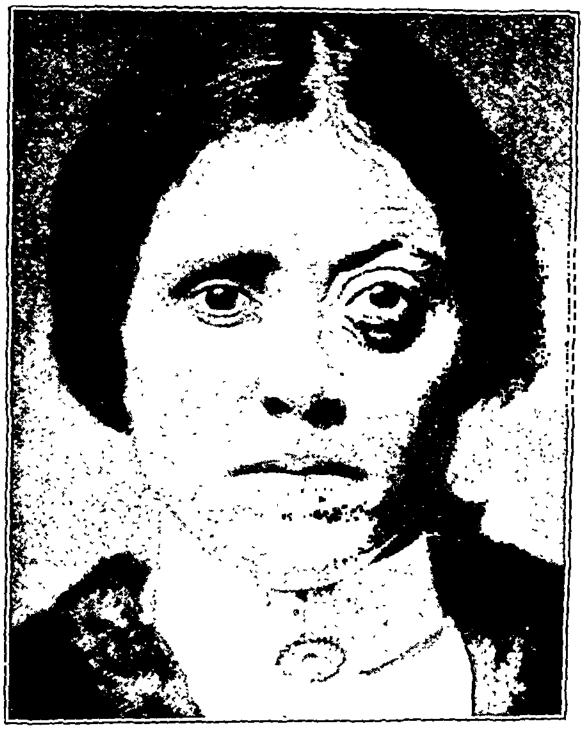

Fig. 4 (Case 7).—Later picture showing return of growth.

Case 4.—Mrs. D., aged 57, had a well-formed subperiosteal tumor lying over the superior maxillary and malar process near the antrum on the left side. There was history of a six months' growth, extremely painful on pressure; the patient said that there was constant pain, evidently due to pressure on the infra-orbital nerve. Oct. 18, 1907, ligation and excision of the carotid on the left side was done, with complete removal of the tumor, which was a large, spindle-cell fibrosarcoma. Two weeks later the opposite side was ligated and excised. After leaving for home the patient did not return for observation. She died eighteen months later, presumably from metastasis.

Case 5.—Mrs. M., aged 58, had a sarcoma involving the left antrum, extending into the orbit, and pressing the left eye far to the left. In December, 1907, ligation and excision were done on both sides, after which the tumor was removed and the eye replaced (Fig. 2). The patient regained strength, and the tumor area remained quiescent for about a year. This was followed by a slow ulcerating process involving the antrum and the orbital plate, causing the eye gradually to slough with some pain and no bleeding. The patient became addicted to morphin, which her family freely administered, and she died two years after the operation. There were no granulations. It looked as if lowered vitality due to morphinism intensified lack of vascularity to the parts, which slowly sloughed, and the patient died of the complications.

Case 6.—Mrs. C., aged 28, had a sarcoma growing from a perforated septum, closing both nares. It was further complicated by a seven months' pregnancy. One side was ligated and excised, Oct. 15, 1909. Two weeks later the opposite side was, and the tumor removed, the patient making an uneventful recovery. Five and one-half years later she was still living, having given birth to two children since the operation, and is now well.

Case 7.—Miss M., aged 20, had melanosarcoma of the orbit, complicated with hematoma, causing absorption of orbital fat and pushing the eyeball far out to the left. At this time, as the patient refused operation on the external carotids, the internal rectus muscle was divided and the eye was pulled further forward. A small tumor mass extending toward the optic foramen was removed without stretching the optic nerve unnecessarily. The orbital operation was facilitated by the absence of orbital fat, and the eye being pressed back into position, the muscle was stitched; drainage was then left for four days. The patient recovered binocular vision and seemed none the worse for her operation. This patient was operated on, Aug. 1, 1910 (Fig. 3). The pathologic report was a melanosarcoma.

Dec. 28, 1911, the patient returned (Fig. 4), accepting the ligation and excision operation, which was performed. The eye was pushed far out to the left with a tumor mass growing in the orbit. This tumor mass was all removed along with the eye; a circular incision was made near the margin of the palpebral fissure, and after the removal of contents of the orbit, the skin was pressed down into the orbit, covering most of it, allowing a small area of granulation to take place. The same method I have employed with excellent results, when one could leave the orbital fat, giving a smooth surface, as in Case 16, in which it had been removed on account of carcinoma of the conjunctiva. March 10, 1915, the physician reported Patient 7 well with a 22-months-old baby.

Case 8.—S., boy, aged 9, March 10, 1911, gave a history of having had a blow three years before over the inner canthus followed by swelling which lasted for days. In August, 1910, the swelling returned. A tumor involving the orbit, apparently originating in the ethmoidal cells, pressed the left eye outward. The tumor was fairly prominent and had been incised by an investigator for pus. I removed this tumor and cauterized the surface following the carotid operations on both sides. A year later there was a tendency to growth, but the eye was in good position and diplopia had not returned. The patient came to me, Jan. 1, 1914, nearly three years later, with a history of bleeding from the postnasal spaces, severe vomiting and headache. He was blind in the left eye, which protruded to the left side. He had lost his temporal field in the right eye, but retained his nasal field of vision.

Opthalmoscopically the left nerve was greatly inflamed, the eye being pushed well outward, with slight ability to rotate the ball. The right nerve showed the nasal side involved and apparently choked for 6 diopters with the temporal half of the nerve congested, but otherwise distinctly not involved, suggesting that the temporal half was sheathed, while the nasal half was bearing all the brunt of the tumor now involving the chiasm. The tumor had traveled back slowly through the orbital fossa following the nerve to the chiasm, and then the surrounding tissue of the brain. The boy died within the month (Fig. 5).

Case 9.—Boy, aged 2, had a sarcoma involving the left antrum and extending into the orbit. The eye was very prominent. Operation was performed on both sides, followed by removal of the tumor and with thorough cauterization of all the affected area. This was a desperate case. The child died four months later. The tumor mass had been growing perceptibly for six months.

Case 10.—G. G., boy, aged 19 years, had an exophthalmic and blind right eye. Vision in the left eye was 20/70. The papillomacular bundle of fibers was intact. An orbital sarcoma involved the optic nerve of the right side. The patient was operated on, May 16, 1912, following ligation and excision of the external carotids and branches of both sides. The orbital cavity was completely exenterated, following a circular skin incision near the margin of the lids, leaving the skin to be transplanted into the bony cavity. The patient made an excellent recovery from immediate operation. The tumor in this case had extended back to the chiasm, leaving only the nasal field of the left eye intact, showing how the function of the optic nerve to the right side and fibers going to the nasal side of the left eye had been destroyed, with their respective fields. Opthalmoscopically the right optic nerve was greatly inflamed from the growth. The left optic nerve on the nasal side was swollen and apparently choked. On the temporal side it was congested, but not swollen or choked, suggesting a separate sheath for each side. Report March 23, 1915; patient living, tumor has not returned, now blind in left eye, married in August, 1913, total loss of vision January, 1914. Is now strong but cannot see and is mentally confused under certain circumstances. I was surprised to learn that he is still living (Figs. 6 and 7).

Case 11. — Boy, aged 11, had an angioma of the cheek as well as a fibrosarcoma which extended down toward the supra-orbital notch and through disturbance of circulation had caused a subconjunctival hemorrhage into the conjunctival sac. March 2, 1912, both externals were ligated. The angioma was removed from the cheek. The tumor was removed from the brow. A letter March 7, 1915, stated that the patient was well and that there was no sign of return.

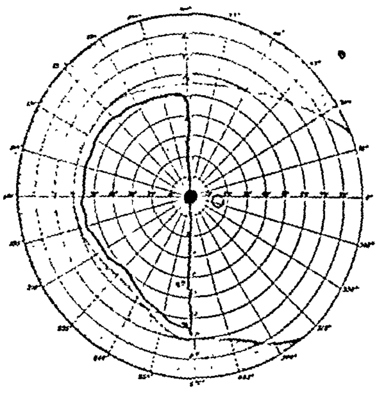

Fig. 5.—Field of right eye in Case 8.

Case 12.—S., a young woman, schoolteacher, with osteosarcoma, involving subperiosteally the alveolar process of the inferior maxilla, increasing the size of her chin to a marked deformity, complained, March 11, 1912, of pain radiating through her face and head. The growth involved both sides of the inferior maxillary bone to a point one-half inch back of the mental foramen. At the time of ligation and excision of external carotids, I made an incision, thinking I might remove some of the deformity, but decided on investigation to leave it with the hope of shrinkage. This has taken place perceptibly. Three years have passed. She is now living and states that though she has a prominent chin, she is without pain and feels well—better than one year before the operation.

Case 13.—Mrs. W. H. M. had sarcoma involving the left side of the orbit, beneath the frontal bone, with swelling due to edema extending over her left temple. Sept. 14, 1910, the orbital tumor was removed and examined, and found to be a sarcoma. The patient refused operation on the external carotids at this time, but on Aug. 18, 1911, she returned with edema over the temple from another mass in the orbit. She was now persuaded to have the external carotids and branches on both sides ligated and excised. The mass was not removed. She is at present living at Athens, Texas, and a recent letter states that she is now blind in that eye. Her vision was good when the carotid operation was performed (Fig. 8).

Case 14.—A boy, aged 12, November, 1910, had a large mass of adenomatous tissue growing on the surface of the tongue, principally the right side, about midway its length. In addition to this, he had a tumor the size of a pullet's egg growing in the submaxillary space of the same side. After ligation and excision of both sides the adenomatous tissue was removed and the base cauterized on the tongue. The tumor, which proved to be adenoma, was also removed and the wound closed. Healing was tardy and interrupted through infection, which yielded to antistreptococcic serum. The patient has been entirely well since.

Case 15.—Mrs. B., May, 1914, had a teratoma of the right side of the palate. She had had a fibroma removed from the uterus two years before. She had not noticed the least inconvenience from the mass growing between the muscles of the palate until a tonsillar infection was superimposed, when she had difficulty in swallowing and in breathing. Her physician, on inspection, discovered that the oropharynx was almost closed. When tonsillitis had subsided, she was sent to see me. On examination I found half of the oropharynx closed with a mass which pushed her tonsil down. It was smooth and gave no evidence, from appearance either anteriorly or posteriorly, that it was so large. To avoid hemorrhage and to enucleate the tumor, ligation and excision was done on both sides. A teratoma, 2 by 3 inches, kidney shaped, was removed through the separated muscular fibers, following an incision through the mucous membrane in the axis of the fibers. There was no bleeding, and dissection of the tumor was accomplished with the finger and blunt tonsillar dissector. The patient is living and well. The pathologist found connective tissue, cartilage, myxomatous tissue, some epithelial cells and some adenomatous tissue and classified it as a teratoma, not a dermoid.

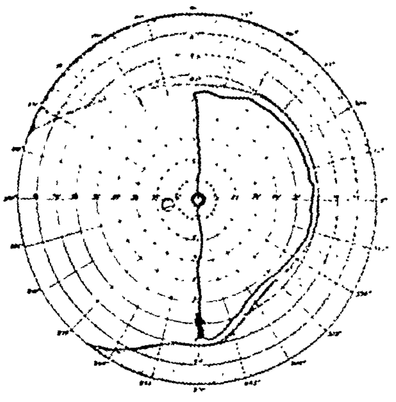

Fig. 6.—Field of left eye in Case 10.

CARCINOMA CASES

Case 16.—H., man, aged 60, underwent a double excision and ligation, in which a cancerous mass, far advanced, was removed, July 3, 1908, in the region of the superior carotid triangle, it being a metastastic tumor from an old carcinoma of the eye. A complete exenteration had been done fifteen months before. The patient improved for the first two months, holding his own for two months following, and then declined in strength and was advised to go home and was also told that he might expect the worst. Although his life was lengthened, he died some months after the operation.

Case 17.—T., man aged 61, had a carcinoma of the right side of the tongue which had increased in size and had been recognized for six months. May 15, 1908, the external carotid and branches on one side were ligated and excised, half of the tongue removed and all glands carefully dissected. The right hypoglossal nerve was sewed to the base of the tongue. The patient lost but little blood and slowly recovered from the effects of the operation. Two weeks later the external carotids in the left side with all glands were similarly treated. One year after the operation the patient was alive. Since that time, I have been unable to gain any information as to whether he is living or dead, but concede his death.

Case 18.—J. T. G., man, aged 35, Dec. 1, 1911, had a carcinoma involving the ethmoidal cells. I operated on both external carotids the same day. Some days later all of the ethmoidal cells were removed. The paient died in October, 1912.

Case 19.—B. T. C., aged 48, June 5, 1911, had carcinoma of the ear. The carotids of both sides were operated on, all glandular involvement and a hard carcinoma mass removed from back of the cartilage of the left ear. The ear was replaced and the patient slowly made a good recovery and was living when last heard from.

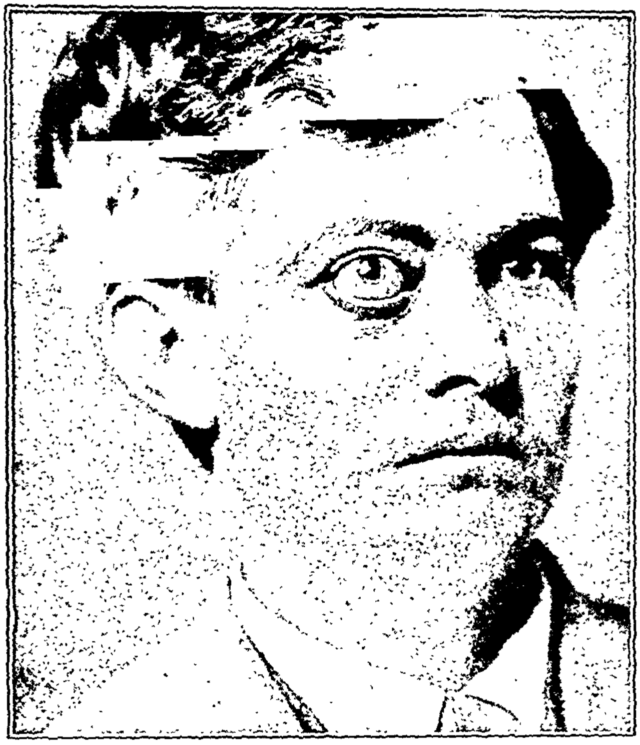

Fig. 7 (Case 10).—Orbital sarcoma.

Case 20.—J. S. G., man, aged 46, Dec. 16, 1911, was operated on for metastatic carcinoma of the lip involving the parotid gland of the right side. From pressure of this gland the patient had suffered excruciating pain throughout many branches of the trifacial nerve. The excision and ligation operation of both sides was followed by dissection of the involved parotid which had locked the jaws; the tumor extended well up beneath the lobe of the ear, and was dissected away from the internal carotid artery and jugular vein. This patient was made more comfortable, and died Oct. 1, 1912.

Case 21.—J. C. A., aged 52, June 22, 1912, had carcinoma of the lip. All branches of both carotids were excised, the cancer of the lip removed and all glands dissected. The patient was seen several months afterward and showed no evidence of return. I presume that the patient is now dead.

Case 22.—Mrs. S. A. G., aged 76, July 6, 1912, had epithelioma of the ear, left side, and epithelioma of the skin near the right inner canthus. Following carotid operation, the ear was removed and the cancer of the inner canthus dissected. The parts have healed and there is no evidence of return. She had double cataract as well. These were removed, and normal vision obtained. Recent report states that the patient is living.

Case 23.—Mrs. H., of Gilmer, Texas, was operated on, June, 1911, for carcinoma of the orbit, involving the eye and surrounding tissues. Ligation and excision of all branches was done, on both sides, and the tumor mass with the ulcerating eye removed. Several days later erysipelas developed and there was a serious infection which gradually subsided, the patient making apparently a good recovery. She was living at Gilmer in December, 1912. I have not been able to hear of her since.

Case 24.—C., man, aged 58, of Grand Saline, Texas, July, 1914, had a carcinoma involving the tongue wall on the left side, of six months' duration. Ligation and excision was done on both sides, all branches, and the glands dissected. One half of the tongue was removed to the base and the whole area closed with uninterrupted sutures without raw surface being left. The patient is now living but probably has metastasis in the neck. A letter states that there is swelling on that side.

CONCLUSIONS

1. (*a*) All branches of each external carotid must be tied.

(*b*) In the majority of cases both sides can be operated on without an interval of two weeks, and this without shock.

(*c*) Sarcoma offers the best results.

2. It may be noted that all the sarcomas occurred on the left side, except two. As the common carotid arises from the transverse portion of the aorta, a morbific tendency might find nourishment in excess from this circumstance.

3. Circulation from the ophthalmic branch of the internal carotid does not prevent the value of the operation in the orbit, as Dawbarn concluded.

4. In this group of cases, sarcoma occurs in all ages. In females it occurs most often beyond the age of 19, and in males, under this age.

5. Cancer occurs in this group oftener in males and only in one case under 46 years of age, which was the ethmoidal case of 28, coming under Case 6 (sarcoma).

6. I have not found in any of my cases an anomaly in the carotid distribution.

7. The results seem best when the tumor is not disturbed, suggesting traumatism at the sight, always an exciting factor.

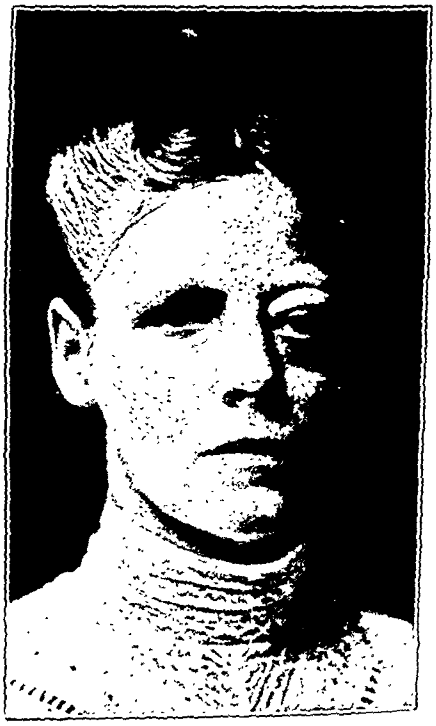

Fig. 8 (Case 13).—Sarcoma of orbit.

8. Though I have not practiced ligating uniformly the accompanying veins, it may be better to do so.

9. Although certain carcinoma cases were treated with the Roentgen ray, no good results were observed.

10. In two cases in which tumors involved the optic nerves — Case 9 secondarily and Case 10 primarily —both demonstrate that the optic tracts reach the chiasm and there decussate; when a nerve proceeds to its destination, the respective nasal half possibly, and the temporal half probably are separately sheathed, as is also the papillomacular bundle of fibers, which are intact and which may be disturbed but not destroyed.

These two cases suggest that, when the temporal sides leave the chiasm, these bundles become invested in a manner to permit an uninterrupted spread of an inflammatory process of either nerve to the nasal half of the other—this being limited as described in Cases 8 and 10.

I have known of the pia sending out trabeculae between fibers, splitting them up into bundles, each fiber having its own myelin sheath, but not a neurolemma as other nerves. A later report might demonstrate a distinct investment of the respective halves, but more likely the temporal side and not the nasal on account of anatomic developments.

One other explanation might account for the foregoing observation: the extension of the inflammatory process of the optic nerve might follow the nerve around on the side involved back of the chiasm, and in this manner cause complete destruction of the nasal half before they decussate, the choking of this part of the disk in the opposite eye taking place from that fact.

There of course is an excellent reason why the operation is of value in sarcoma and to a more limited extent in carcinoma. Our knowledge of metastasis is based on the morphology of these tumor masses, and we all know that the cells of the sarcoma variety make up the walls of the blood vessels, the cells themselves depending on this rich blood supply for their growth. When this is cut off, they necessarily shrink and cease to grow; whereas, in carcinoma, the blood vessels are not involved. The lymph channels remain and can easily carry off some of the infection to lymph nodes elsewhere, extending the progress regardless of the blood supply.

My observation has been that a distinct deterring influence is exerted in the carcinomatous growth, but that is the best that can be said. On the other hand, in sarcoma, your result can in a way be measured by the completeness of your operation in tying off and destroying all of the branches so that anastomoses will be controlled, whatver the cause of malignancy; the lack of nourishment influences the growth.

The technic of the operation as well as the things to avoid while operating will interest you only when a case presents itself. This information you can find without difficulty.

ABSTRACT OF DISCUSSION

Dr. C. G. Savage, Nashville: The subject presented by Dr. Cary is worthy of our deepest consideration. I have never had any ligations done.

One case I recall especially because of a second recurrence in a strange location. The cancer involved primarily the lower right lid, but later involved the right eye also. My first operation removed the entire lid and the globe. There was a recurrence in the orbit a few months later. In the second operation I removed the entire orbital contents. Without further manifestations in the orbit, a tumor formed on the corresponding side of the neck just below the ear, which was evidently malignant. It seemed to me that the man was doomed. I do not like to operate below the chin line, so I had one of our surgeons operate for the last malignant growth. The operation was done very thoroughly, the wound was left open and Roentgen-ray treatment instituted. Afterward I saw the patient frequently and I think I can safely say that at least a year after the operation there had been no recurrence. At that time the man was rejoicing because we had told him we could give him only temporary relief. The presentation of this subject ought to have a tendency to further nullify the recurrence of such tumors.

Dr. E. H. Cary, Dallas, Tex.: A question has been asked concerning a point which I did not bring out in the paper for the sake of brevity. In carcinomatous growths ligation could only effect a retardation of the growth. You really do not check it as much as you want to check it and the operation is not a success in carcinomatous growth. If there was some plan by which the lymphatic channels could be found and cut off, I think you could find a method of cutting off the spread of carcinomatous growth. In carcinomatous growth it is true that best results can be obtained if you can tie and cut off all the branches on each side and not disturb the main growth at all. One case of sarcoma involving the inferior maxillae, without much traumatism, I recall. This sarcoma receded and the woman has been teaching school for three years. I began operating with the idea of removing the growth, but when I saw it I knew it would remove almost the entire chin, so I proceeded as mentioned.

INTRATHECAL INTRACRANIAL INJECTION OF AUTONEOSALVARSANIZED SERUM FOR SYPHILITIC HEADACHE *

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Among the various methods devised for the use of salvarsan or neosalvarsan in the management of cases with involvement of the nervous system caused by recent or old syphilitic infection, the autosalvarsanized serum method appears to be the most successful. Such seems to be the view held by the majority of observers who are familiar with the subject. My experience in almost a hundred cases of syphilitic and parasyphilitic affections of the cerebrospinal axis is entirely in accord with that of others. Comparing this method with the intramuscular and intravenous, the results obtained are by far superior to those in the two latter procedures. The reason of it has been emphasized by Swift and Ellis, the originators of the method, and has been sustained by subsequent observers. Indeed the statement is a logical one that by subarachnoid injections a spirocheticidal substance is brought into direct contact and immediate relation with the nervous tissue and the spinal fluid, and consequently with the etiologic agent disseminated in both.

The introduction of salvarsanized serum may be accomplished in two ways: either intraspinal or intracranial. The intracranial method has been applied chiefly in cases of paresis, as it has been shown by a number of writers that only slight beneficial effect, or no effect at all, resulted from the intraspinal injections in this particular affection so far as mental symptoms are concerned, although some improvement has been obtained in the condition of the cerebrospinal fluid, particularly with reference to the cell count. In my experience with twenty-seven paretics, amelioration in the mental manifestations was observed in ten patients. Nevertheless, if a comparison is drawn between the syphilitic affections in which the brain symptoms predominate and those in which the cord symptoms are the most conspicuous, I may say that the autosalvarsanized serum, introduced through lumbar puncture, has given me, speaking generally, more favorable results in the latter than in the former cases.

It is therefore logical to presume, at least, that the circulation of the cerebrospinal fluid is such that it is not capable of transmitting the intraspinal injected specific remedy in an upward direction toward the upper portion of the cerebrospinal axis. At this juncture it is interesting to take notice of the important experimental work done with the object of verifying the above clinical observation.

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* From the Neurological Department of Mount Sinai Hospital.

Harry Campbell[1] gives the following account of experimental work in the *British Medical Journal:*

> If trypan blue be injected through a trephine hole into the cranial subarachnoid space above the tentorium cerebelli, not only the cortex cerebri, but the entire cerebrospinal axis is found, postmortem, to be stained. If, on the other hand, the pigment be injected into the spinal subarachnoid space by means of a lumbar puncture, the cortex cerebri remains unstained, the staining in these cases being confined to the spinal cord and brain stem. It would appear that the cerebrospinal fluid flows from the cranium spinalward—probably a meager current—and also that some slight ebb and flow takes place between the fluid in the subarachnoid space at the base of the cranium and the spinal subarachnoid space, in accordance with variations in the quantity of intracranial blood.

More recently, William C. Woolsey[2] repeated Campbell's experiments with trypan blue and arrived at the same conclusion, namely, that when administered intraspinally its diffusion to the cranial cavity is less intense than in the cord. He could see that the meninges of the cord were stained a deep blue up to the level of the cervical enlargement from which point, by gradual gradations, the intensity of the color diminished to the foramen magnum. The periphery of the cord itself just under the pia was stained a distinct blue for a distance of from 0.5 to 1 mm. below the surface. No such invasion of the brain above the medulla could be distinguished.

Wardner[3] and Martland have made postmortem injections of carbolfuchsin into the spinal subarachnoid space on several cadavers. In no case, they say, even with the bodies placed head down and in almost erect position, has any staining of the structures beyond the posterior fossa been observed.

All these facts throw considerable light on the subject and explain fully the comparative failure in treatment of paresis or other syphilitic affections of the brain by the exclusive intraspinal introduction of salvarsanized serum.

The direct intracranial method has at this time quite a number of advocates. Levaditi, Marie and Martel, Neisser and Pollac, Marinesco and Minea, Berriel, Balance and Campbell are the earlier writers who almost simultaneously utilized salvarsanized serum for intracranial injections. All of them observed favorable results. Wardner, in a recent contribution,[3] reports six cases which he treated in collaboration with Martland, Eagleton and Beling by the intracranial method, from which he obtained some encouraging effect.

That the introduction of autosalvarsanized serum into the subdural space of the cranium may be a method *par excellence* in some select cases in which cerebral symptoms predominate; that the previously mentioned experimental work with regard to the current of the cerebrospinal fluid which is directed from the cranium spinalward, but not vice versa—both facts find their striking corroboration in the events of the following case, which seems to possess all the characteristics of a carefully carried out laboratory experiment.

J. K., tailor, aged 40, contracted syphilis at the age of 25. About two years ago he commenced to have pain in the upper cervical region. At first nocturnal, the pain gradually became continuous. The patient relates that the several physicians whom he consulted at first all agreed that in view of the history of syphilitic infection it was advisable to administer salvarsan, to which the patient consented.

The slight effect produced by the first injection necessitated repetition of the treatment and he received five injections, all intravenously. As the headache continued with greater severity, his last physician, Dr. Bellak, referred him to my service in the Mount Sinai Hospital. On examination the following condition was found. He suffered intense pain in the entire cervical and upper dorsal regions but especially in the occipital region and over the vertex on the left side. The pain was so severe that for nights he could not sleep. He was unable to eat, lost his appetite and began to lose in weight.

Physical examination showed: slight Romberg sign, markedly increased patellar tendon reflexes, but no other abnormal reflexes. He had frequent and sometimes imperative micturition and defecation. There was complete loss of sexual power. There were no changes in the objective sensibility. The mentality was fairly good.

The eye examination by Dr. LeFever showed a double primary optic atrophy well advanced; no response to light in either eye; accommodation and convergence were diminished; the visual fields symmetrically contracted; pupils unequal: right, 2.5 mm.; left, 3 mm.

A Wassermann test made on admission to the hospital by the pathologist, Dr. Rubenstone, proved to be strongly positive in the serum and spinal fluid.

Urinalysis showed traces of albumin. The thoracic and abdominal viscera were normal. The diagnosis was made of cerebrospinal syphilis.

In view of the previous intravenous injections of salvarsan which, according to his physician, gave no results, the intraspinal injections of autoneosalvarsanized serum were undertaken. The patient was given, intravenously, 0.9 gm. of neosalvarsan. About thirty minutes later 50 c.c. of blood were drawn from the median basilic vein. The blood was set aside for clotting and then centrifuged. It was then heated to 56 C. (132.8 F.) for half an hour and placed in the ice box over night. The next day the serum was diluted with a normal solution in freshly distilled water to make in all 30 c.c. A lumbar puncture was immediately made, 30 c.c. of spinal fluid were withdrawn and replaced by the 30 c.c. of the neosalvarsanized serum.

On the day following the treatment the pain in the head and in the neck was slightly improved, but very soon the same suffering returned. The condition of the sphincters began to improve rapidly; the tendon reflexes became less prompt. As the patient's suffering was unusually severe and he could not sleep, two weeks later another identical treatment was given and again without any effect on the headache. The withdrawn spinal fluid showed still a strongly positive Wassermann reaction and increased albumin content.

During a period of twenty-one weeks the patient received seven intraspinal injections of autoneosalvarsanized serum at two and three weeks' intervals. With the exception of the first, for each of the six other injections, 0.6 gm. of neosalvarsan was used. The Wassermann reaction remained positive. While the symptoms referable to the spinal cord have all disappeared, and the pain in the neck, probably due to a syphilitic cervical pachymeningitis, has greatly improved, nevertheless the headache remained unaltered in severity. It was particularly intense in the left parietal area. The insomnia was exhausting to the patient. The eyes were repeatedly examined and found in the same condition.

As the patient persistently pointed to the left parietal region as the seat of the intense pain, the thought occurred to me that we may deal here with a localized syphilitic thickening of the skull. He had been given, symptomatically, all coal-tar preparations, sedatives, mercurials and iodids, and there was no relief from the excruciating headache.

A decompressive operation was proposed to the patient and he promptly accepted it. Dr. N. Ginzburg removed a large flap of bone over the left parietal region. The skull was found decidedly thick. The membranes were seen covered with light gray patches of the size of a ten-cent piece, four in number, and quite a large number of very small patches irregularly distributed. The dura was not opened.

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[1] Campbell, Harry: Brit. Med. Jour., March 14, 1914, p. 577.

[2] Woolsey, W. C.: Experimental Subarachnoid Injections of Trypan Blue, Jour. Nerv. and Ment. Dis., July, 1915, p. 477.

[3] Wardner, Drew M.: A Report of Five Cases of the Intracranial Injection of Auto-Sero-Salvarsan, Am. Jour. Insan., 1915, lxxi, 459.

On the day following the operation the patient felt some relief from the headache, but twenty-four hours later the pain returned with the usual severity. The wound healed up very promptly. The patient kept on suffering for the following two weeks. Insomnia, and anorexia were pronounced.

It was evident to me, in view of the fact that the cord symptoms were controlled by the intrathecal spinal injections of autoneosalvarsanized serum, that the latter did not reach the subarachnoid space of the cerebrum. Campbell's remarks[1] regarding the experimental work on the spinalward current of the cerebrospinal fluid appeared to me strongly applicable to the present case. An excellent opportunity presented itself here for injecting the cranial subarachnoid space. Accordingly the patient was given an intravenous injection of 0.6 gm. of neosalvarsan and serum was prepared by the pathologist in the adopted manner for the following day.

The patient was etherized; a lumbar puncture made, 30 c.c. of spinal fluid were withdrawn. The wound of the skull was reopened and 30 c.c. of the neosalvarsanized serum were injected carefully under the dura in close proximity to the large gray patches. On the day following the operation the patient began to feel better. The headache gradually subsided. He commenced to sleep at night, the appetite improved rapidly. The scalp wound healed up in ten days. The patient left the hospital two weeks later totally free from pain. He began to gain in weight and felt happy. Since then he has reported to the out-patient department regularly every week for a period of four months. No recurrence of pain has been observed. While the patient's general condition is, at present, normal, the condition of the eyes remains unaltered.

The present case appears to be of great importance from a therapeutic standpoint, also because of a clinical corroboration of the physiology of the movement of the cerebrospinal fluid.

The fact that seven injections of neosalvarsanized serum into the spinal subarachnoid space relieved and finally removed the cord symptoms alone and brought no relief whatever to the intracranial manifestations, points logically to a strict parallelism between this clinical observation and the experimental observation with trypan blue previously mentioned.

It is evident that had a good upward flow existed in the cerebrospinal fluid, the large amount of neosalvarsan injected in the spinal intrathecal space would have carried its spirillicidal effect to the neurons of the cortex cerebri. The rapid and remarkable effect produced on the brain tissue by direct contact with neosalvarsanized serum is undoubtedly equal if not superior to a direct laboratory experiment carried out with mathematical precision. My patient will perhaps require repeated intracranial injections, but the result obtained so far points strongly to the intracranial route as being the only one to be adopted in cases with conspicuous and persistent cerebral manifestations.

1812 Spruce Street.

Paranoids and Brilliancy.—The paranoids are often supposed by an innocent public to be brilliant because they are frequently fluent talkers, plausible, and full of pseudologic, and the world, especially today, is prone to worship the god of verbosity. If I were breeding people as we breed horses, no man with a gift of gab, a different quality than gift of speech, would be permitted to come into my experiment station.—Charles W. Burr, M.D.

SPONTANEOUS EVOLUTION OF A TRANSVERSE PRESENTATION

WITH REPORT OF A CASE *

NATHANIEL G. PRICE, M.D.
Visiting Obstetrician, Newark Beth Israel Hospital
NEWARK, N. J.

A transverse presentation, if unaided by art, may have five possible terminations: 1. Impaction, with excessive retraction of the upper uterine fibers, rupture and death of mother and fetus from hemorrhage or exhaustion. This is by far the most common outcome of neglected shoulder presentations. 2. Spontaneous birth by a doubled body, the condition termed "evolutio conduplicato corporis" by Roderer, in which the head and thorax are jammed tightly into each other and are born together. 3. Spontaneous rectification, that is, under exceptional conditions the lower fetal pole may be pushed downward and finally become the presenting part. 4. Spontaneous version, in which, as the result of excessive unilateral contractions of the uterus, the upper fetal pole is pushed downward and actually presents at the vulva. 5. Spontaneous evolution, as described by Douglas of Dublin. In this favorable termination, the presentation remains unchanged, but the trunk and buttocks, impelled by powerful contractions, roll past the shoulder and extrude from the vulva before the presenting shoulder.

It was my good fortune to attend a case of labor with transverse presentation, which terminated with the interesting phenomena of this last form of natural delivery. Inasmuch as Prof. J. W. Williams of the Johns Hopkins University cites in his treatise but one instance of such an occurrence in his varied and extensive obstetric experience, the report of this case must prove at least of statistical value.

Mrs. B., a stocky young primipara, aged 20, height 4 feet 10 inches, weight 140 pounds, was admitted into the maternity ward of the Newark Beth Israel Hospital, July 12, at 5 a. m. in advancing labor. Her pelvimetric measurements were those of a slightly justomajor pelvis; interspinous 27, intercristal 30 and external conjugate 22 cm. The junior intern, Dr. Hirsch, examined her on admission and found the os dilated 4 fingers, but because of a tense and bulging bag of waters, he alleges, he was unable to make out the exact presentation; he could find no fetal heart sounds. At 7:30 the bag ruptured and the right arm prolapsed as also some coils of cord, which had no pulsation. He at once summoned me to the case. The diagnosis was apparently a left scapulo-anterior, so I ordered ether anesthesia in expectation of doing a version or decapitation if I found the former measure too hazardous. I might add that the patient was having terrific bearing-down pains.

Before she was fully under the anesthetic, to my great surprise, I observed the shoulder rotate forward under the pubic arch, sink downward and become visible at the vulva. With the next pain, which was unusually violent, the dorsum, laterally bent, appeared, then the buttocks, legs, posterior shoulder and arm. The head still remained in the pelvis; tilting the trunk toward the abdomen of the mother and making moderate traction effectually liberated it.

The fetus had some noteworthy characteristics; it was the size found in an 8-months' pregnancy and weighed 5½ pounds; it showed signs of commencing maceration, as evidenced by peeling of the skin, in several small areas; the neck was peculiarly elongated so that it had a diameter of 1½ inches; the head was of conical shape and terminated with a meningocele; all the cephalic bones were widely separated and the umbilical cord, more than a yard long, tapered almost to a point at its umbilical insertion.

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* Presented before the Clinical Society of the Beth Israel Hospital, July 27, 1915.

Outside of a slight rise of temperature the first four days of the puerperium, which was probably sapremic, the patient made an uneventful recovery.

It can be readily understood that evolution is impossible unless three essential requirements are fulfilled, namely, a roomy pelvis, a small, easily compressible fetus and powerful bearing-down pains; all these factors were manifested in this case.

In the rather meager literature of this remarkable resourcefulness of nature, a few instances of living children have been reported. In the treatise on midwifery by Prof. William Thomson Lusk, my lamented teacher, mention is made that Kuhn cites a case in which a living child was born, weighing 4½ pounds, after the spontaneous evolution of a shoulder presentation. Also that Simon, according to Spiegelberg, collected 125 cases in which 14 infants were born living; three of the mothers had died.

The determination whether spontaneous delivery will be effected in a particular instance is extremely difficult and ordinarily we should waste no time in anticipation of such a favorable outcome; this is especially true if the diagnosis of transverse presentation is made early before the bag of waters has ruptured. But if the expectant mother is in good condition, if the fetus is premature, if excessive retraction has already taken place making internal version a dangerous procedure, and if evidence of beginning evolution is already present, we might for a reasonable time adopt the policy of "watchful waiting" rather than proceed at once to decapitation. Indeed, in favorable instances, if the pelvic floor is offering an unyielding obstacle to Nature's attempt at delivery, we might expedite matters by following the recommendation of Dr. Taylor and overcome the resistance, by making deep incisions into the distended perineum to the extent of 3 or 4 inches, at the vulva.

56 Boston Street.

APPENDECTOMY THROUGH THE RIGHT INGUINAL CANAL

GEORGE DE TARNOWSKY, M.D.
CHICAGO

Removal of the appendix through the right internal inguinal ring is not a new procedure; it has probably been done, in a more or less unpremeditated manner, by many surgeons; but, so far as I can learn, the method has never been advocated as a justifiably integral part of a right inguinal herniotomy.

The now well-established custom of removing the appendix whenever the lower abdomen is opened led me to adopt the habit of carrying out the same prophylactic procedure during the performance of all right inguinal herniotomies, whether of the oblique or direct type. The femoral ring is usually too far removed for this purpose. I have performed the operation over fifty times with uniform good results. In no case has infection occurred, either within the peritoneal cavity or in the inguinal canal; the wounds have healed with normal rapidity and, so far, no relapses of the hernias have been reported. The patients have not complained of more pain than is habitually experienced in simple herniotomies; neither has nausea or meteorism been accentuated by the added intraperitoneal work.

The cecum lies in the right iliac fossa, directly on the iliac fascia. Its lower end is from 4 to 6 cm. from the internal ring, depending on whether it is in a distended or contracted condition. When it is full, the lower end lies just over the outer half of the inguinal ligament. The outer wall or outer right margin is in contact with the lateral abdominal wall. It is always sufficiently mobile so that it can be delivered through the ring, partially or in toto, depending on the size or distensibility of the latter. As for the appendix, the only practical point to remember is that it is given off directly from the mesial posterior wall of the cecum, behind and beneath the termination of the small intestine. Delivery of the cecum must be resorted to whenever the tip of the appendix is retrocecally located, its mesentery is abnormally short, or it is displaced by kinks or adhesions.

TECHNIC

1. The usual herniotomy incision is employed, opening the inguinal canal.
2. The sac is separated from the cord, the sac opened, and its contents—if any—dropped back into the peritoneal cavity.
3. The contents of the inguinal canal are protected by means of a gauze pad.
4. The index finger of the right hand is passed through the sac opening obliquely upward and outward, that is, continuing in the direction of the canal.
5. The finger is swept along the iliac fossa from without inwardly until the cecum is encountered. The appendix can often be recognized by the touch, and its relative position ascertained.
6. If the internal ring admits two fingers or can be readily stretched to admit them, I am in the habit of introducing both index and middle fingers, grasping the cecum between them, and delivering it. When the appendix is freely movable, it has often been possible to hook the index finger over its base and thus deliver it, only one finger being necessary for this maneuver. With a small, not readily distensible ring, by passing a straight intestinal forceps of the Barrett type alongside of the index finger, the cecum can be identified, grasped by the forceps and delivered. Finally, I have lately tried the expedient of putting on a surgical cotton glove over the rubber one in order to obtain a better grasp of the slippery cecum or appendix. The experiment is worth trying, but one must get accustomed to the clumsy thickness of the cotton glove.
7. The removal of the appendix itself presents no great difficulties. Only three points in technic need be emphasized:

(*a*) Having grasped the appendix or its mesentery by means of a suitable forceps, as much of the cecum as possible should be replaced into the peritoneal cavity before going any further. This will avoid any possible danger of strangulation.

(*b*) The purse-string suture is placed around the base of the appendix before it is amputated or its mesentery is tied off. This obviates the annoying possibility of the stump slipping out of sight before the operation is completed. In other words, it gives the operator something to hold on to.

(*c*) In the retrocecal type of appendix, with very short mesentery, it is much easier to amputate the appendix first at its base, between two clamps, dissecting it out from below upward and controlling the blood supply by means of a running suture of fine silk or catgut. These closely adherent retrocecal cases are the only difficult ones to remove. It is a waste of time to try and reach the tip of the appendix first; the tension is so great that either the mesentery or appendix will tear. Suture of the short meso-appendix must be done by means of a short full-curved needle; here again it has seemed easier to begin proximally, that is, at the stump of the appendix, and suture upward, using the glover's lock-stitch.

8. The hernial sac is closed, and the hernitomy completed. It seems puerile to state that no drainage should ever be used in the canal, but as I have on several occasions been asked this question, it has seemed best to lay emphasis on this particular point.

COMMENT

As technic and confidence in the procedure improved, the time element has been rapidly reduced. Anesthesia is now prolonged an average of five minutes, so that undue lengthening of the operation cannot be adduced as a contraindication. The alleged danger of infecting the inguinal canal with resultant recurrence of the hernia, which has made a number of clinicians hesitate to adopt the procedure, has proved to be nonexistent.

In my series of cases, 30 per cent. of the appendixes removed were found to be grossly pathologic; hence I feel convinced that inguinal apppendectomy is a rational procedure. Of course, I do not advocate the inguinal route in nonherniated patients; neither would I advise that an acute appendix be removed by this route, even in the presence of a coexistent right-sided hernia. I am of the opinion, however, that, in all right inguinal herniotomies, the removal of the appendix through the sac and ring is a legitimate, logical and comparatively easy procedure.

Should the necessity of drainage ever present itself, it is a simple matter to pass a curved forceps through the sac opening to the iliac crest and make a stab drain. This was done in Cases 528757 and 530288 of my Cook County series. The first case proved to be one of tuberculous peritonitis with a badly kinked retrocecal appendix; the second, wrongly diagnosed as a strangulated hernia, turned out to be a gangrenous appendix with abscess in the scrotum. Both cases healed satisfactorily.

30 North Michigan Avenue.

A PLAGUE-LIKE DISEASE OF CALIFORNIA GROUND SQUIRRELS AFFECTING MAN IN OHIO

WITH A DEMONSTRATION OF SPECIMENS *

W. B. WHERRY, M.D.
CINCINNATI

SUMMARY

Following the discovery of a plague-like disease, due to *B. tularense*, by McCoy and Chapin in California, W. B. Wherry and B. H. Lamb described the occurrence of the same micro-organism in two cases of conjunctivitis in Ohio. Both cases were characterized by ulcerative conjunctivitis involving the palpebral conjunctivae, accompanied by lymphadenitis of the preauricular and cervical glands on the corresponding side, a high temperature and marked prostration.

These patients were under the care of Dr. Derrick T. Vail and Dr. Robert Sattler, respectively, and their clinical courses have been published in the *Ophthalmic Record* (1914) and the *Archives of Ophthalmology* (1915).

In searching for the probable source of infection in these two cases the following points were considered: Both patients were affected with the virus affecting rodents in California; both patients had handled rabbits previous to the onset of the disease; there were numerous rumors that wild rabbits in Ohio, Kentucky and Indiana were dying off in large numbers of some disease. With the kindly cooperation of Dr. J. H. Landis, health officer of Cincinnati, the same disease due to *B. tularense* was discovered in wild rabbits found dead in southeastern Indiana.

The virus (a small encapsulated rod) is extremely difficult to demonstrate and is best stained with anilin Hoffman's violet or gentian violet. It could not be grown on any medium except the coagulated egg-yolk recommended by McCoy and Chapin.

All the esential features of the disease as it occurred in man could be reproduced by placing a little of the virus in the eye of a rabbit or guinea-pig.

Infection also takes place, in rodents, through the gastro-intestinal tract, through the nasal mucous membrane, and, as shown by McCoy and Chapin, squirrel fleas (*Ceratophyllus acutus*) may successfully transfer the virus. As the recent experiments of Dr. Wayson show, the house fly and the stable fly (*Stomoxys calcitrans*) may also transmit the virus shortly after feeding on an infected animal.

It seems likely that this rodent disease is widely distributed and that through the watchfulness of health officers further cases will be discovered.

ABSTRACT OF DISCUSSION

Dr. G. W. McCoy, Honolulu: It is gratifying that what we thought was a problem of purely scientific interest should have turned out to be one of practical importance in preventive medicine. Apparently we have another disease to add to the list of those traced primarily to the lower animal and occasionally transmissible to man. I would like to emphasize that this is an example of a plague-like disease, but one not due to a pest-like bacillus. It is easy to get these things confused. The organism, as Dr. Wherry has said, is in no way similar to the plague bacillus, yet in practically all the animals with which we worked the symptoms and lesions were similar to those of plague. We thought we were fairly familiar with plague, but when the first case of the new infection came under observation we would have fallen into error but for the fact that we insisted on cultural verification of every case. We carried the infection on in animals, and soon found that we were dealing with a disease of rodents other than plague. A great similarity to the lesions of the plague was the most striking point about it. After we had had a great deal of experience with this disease to supplement our experience with plague, we could in a majority of cases differentiate the gross lesions; and of course a microscopic examination would practically always decide the matter at once, and a cultural investigation would invariably do so. Dr. Wherry spoke of the cultures losing their virulence. We found that to be the case with the cultures from squirrels. I do not recall now whether we had any culture that became entirely avirulent. There is one point of importance about the lesions produced by these avirulent cultures, and that is that they produce in guinea-pigs lesions which are practically indistinguishable from those of tuberculosis. I remember when we first observed these subacute or chronic lesions we thought there had been some error in our technic and that we had introduced tuberculosis. We found that this was not the case. I may say that we always kept in mind in our work the possibility of the occurrence of the plague-like disease in man.

Dr. N. E. Wayson, San Francisco: We have duplicated Dr. McCoy's methods of flea transmission of the disease, but were not so successful as he in our results. Healthy animals separated from those infected by wire netting of the same mesh as mosquito netting, with fleas as the only common carriers, remained well. Our experiments with fly transmission were positive. The stable-fly transmissions were made by allowing the fly, held captive in a vial covered with netting, to bite the infected animal, and transferring it to a normal animal, changing the gauze between bites to prevent possible contact infection of the shaved belly of the normal animal. The stomoxys experiments were successful in a small percentage of cases; but the house-fly experiments yielded nearly 100 per cent. of "takes." The house flies were allowed to feed on, and crawl over, infected viscera, and then crawl over a cocainized eye. This method was positive in transmission, even with a twenty-four-hour interval between the exposure to the infection and to the normal eye.

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

We have not been successful in transmitting the plague-like disease by the methods of the Indian Plague Commission, in which fleas known to be infected are individually fed, under observation, on normal animals. Our control experiments in plague with this method have also been negative; probably due to an insufficient degree of septicemia in the infected animal used as a host. The same criticism in the plague-like disease experiments will not hold.

Dr. Nathan Barlow, Cuyamel, S. Honduras: During the last fifteen months in Honduras we have frequently had outbreaks of a peculiar disease which resembled climatic bubo, and was reported by me as an epidemic of climatic bubo, but which resembled very closely the disease described by Dr. Wherry, with the exception that there were no conjunctival symptoms. The gland juice from this disease was found by ordinary cultural methods and by ordinary stains to be free from demonstrable micro-organisms, which agrees with the description of climatic bubo; but it seems to me not impossible that some diseases which are at present classed as climatic bubo may really be infections with the same or a similar organism to that described by Dr. Wherry.

I should also like to bring out the importance of making practitioners in subtropical countries more acquainted with this and all other plague-like diseases, because it has twice happened that my assistants have made the diagnosis of plague, and were ready to bring about measures which would have been sure to quarantine Honduras, and I was able to see the cases before these steps had been taken. By making the proper examinations we were able to demonstrate that the cases were not plague. The serious results of such a mistake would be greater in the case of the Central American countries than in the United States, because the health authorities cannot go so far with the people there as here; and after one such error it is very likely that if true plague were later found, the necessary quarantine measures would be very much delayed.

Dr. William B. Wherry, Cincinnati: I do not see any reason why this virus should not produce other types of disease in man besides conjunctivitis. It seems possible, judging from McCoy and Chapin's work, and our own work on animals, that human beings might be infected by way of the gastro-intestinal tract and through abrasions of the skin. The virus might give rise to some forms of rhinitis, sore throat, and tonsillitis. Those are the possibilities. I am not at all certain that the virus is virulent enough to produce septicemia in man. Unfortunately we did not avail ourselves of the opportunity that we had to test that. We should have drawn off some peripheral blood to see if the virus were circulating or not. In one case we took blood rather late, and the results were negative. It seems that the virulence of the virus is diminished by passage through man. Guinea-pigs inoculated directly from a human being died after six or seven days; and in three or four days when it came from another guinea-pig; so apparently the virulence is slightly diminished for rodents by passage through man.

Improving the Race.—Environment and education alone cannot make appreciable progress in the improvement of the race. But with favorable surroundings and the selection of the best types the field for improvement is limitless.—Luther Burbank.

New Instruments and Suggestions

PROTECTION OF STERILIZED DRESSINGS FOR SHIPPING ABROAD

Gordon G. Copeland, B.A., M.D., Toronto, Ontario

It may be of interest to report by what method surgical dressings have been sent abroad to the Red Cross or other organizations, insuring their arrival in perfect condition. A year ago I was impressed with the unsatisfactory methods of shipping sterile dressings, and devised some of the essential steps in the method I report. I explained the idea to the Canadian Red Cross, and other organizations here who have enthusiastically adopted the method, which has proved practical in actual operation.

Red Cross packing cases are 27 by 15 by 15 inches, outside measurements, with rope handles. These cases fit into transport wagons and are a standard size. They are 26 by 14 by 14 inches, inside measurements. I designed two tin boxes of equal size to exactly fit into the standard Red Cross case. They were first manufactured through the kindness of the Christy Brown Company, and the Macdonald Manufacturing Company is now making the boxes and selling them at the actual cost of material, about 25 cents. The box is according to the following description: 30.2 cm. (11$\frac{11}{16}$ inches) wide, 35.1 cm. (13$\frac{13}{16}$ inches) long, 34.7 cm. (13$\frac{11}{16}$ inches) deep, outside measurements. All edges are soldered. There is a rim or ledge turned in all around the open top, the ledge being 0.8 cm. ($\frac{5}{16}$ of an inch) wide. There are two lids: the first is of flat tin which is to be soldered to the top ledge when the dressings are in place. It is 29.6 cm. (11$\frac{11}{16}$ inches) wide, by 34.7 cm. (13$\frac{11}{16}$ inches) long. From one corner a triangle is cut off, 3 cm. (1$\frac{1}{4}$ inches) on two sides. On the under surface a wire ring is soldered, and under this another slightly larger triangle of tin is soldered to make the corner the same size as before it was cut. This ring is for tearing off the soldered lid when necessary. A top lid with a turn down of 1.8 cm. ($\frac{11}{16}$ of an inch) is put on over all.

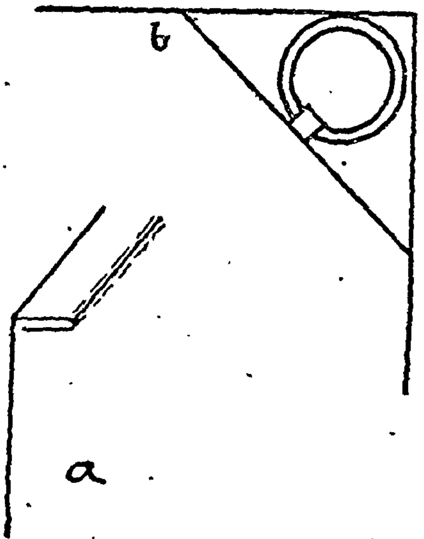


Diagram of construction of box for sterile dressings; *a*, ledge turned in around open top; *b*, ring for purpose of opening box.

The dressings are packed into Canton-flannel bags which exactly fit the tin boxes. In order to have the right shape, the bags are placed in the tin box first, and the dressings, such as gauze wipes, compresses or surgical pads made to the standard Red Cross sizes, are carefully packed into the Canton-flannel bags. When full, the bags are taken out of the tin boxes, and sewed up with a running or overcast stitch which can be easily undone. The bags are marked with a table of contents and the name of the society making them. They are then wrapped in sheets so as to be handled without soiling. The bags of dressings are then steam sterilized under high pressure on two occasions, and are absolutely sterile. The tin box is flame sterilized by pouring in methylated spirits and lighting it. The first tin lid is also flame sterilized at the same time. The boxes become nearly red hot, and absolutely sterile. A nurse, wearing sterile gloves, packs the sterilized unwrapped bags into the sterile tin boxes, and the sterile tin lid is put on with the ring up. This lid is then soldered all around and at this stage, every crack being hermetically sealed, the interior of the box and the contained dressings are and will remain sterile so long as the box is unopened. A list of contents is placed on the top of the first tin lid, the final lid is placed on top, the two boxes are placed in the wooden Red Cross case and the lid nailed on. These boxes may be sent to the ends of the earth, the contents being in perfect condition as regards dryness and sterility so long as they are unopened; and surgeons at the base hospitals, or at the firing line, can depend on the dressings arriving in as perfect condition as if they came from the sterilizer to the operating room in the best hospitals.

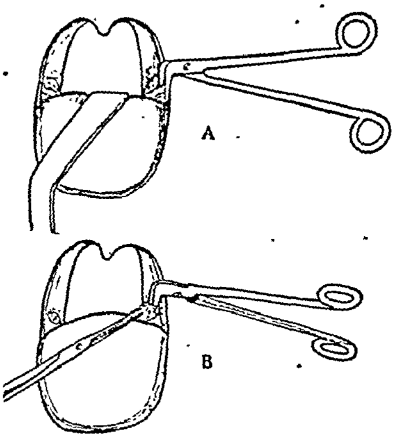
The majority of the guaranteed sterile dressings sent from Toronto have been sterilized and packed at the Toronto General Hospital under the conscientious supervision of Miss Gunn, the woman superintendent, and Miss Dunbar. The reports coming to us from abroad are that the dressings are a wonderful blessing to the surgeons and the wounded.

NEW INSTRUMENT AND TECHNIC FOR CIRCUMCISION OF THE TONSIL

Frank G. Murphy, M.D., Mason City, Iowa

In a previous article[1] attention has been called to a new operation for the relief of chronic tonsillar infection. This operation consists of the establishment of free drainage of the tonsillar and peritonsillar region, with subsequent atrophy of the tonsil, by separating the attachments around the tonsil instead of its enucleation. The method of procedure in this operation is as follows:

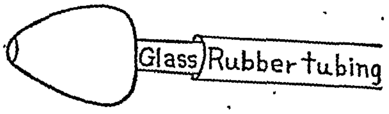
After the field of operation has been anesthetized, the forward blade of the scissors is inserted behind the plica between the anterior pillar and the tonsil, the incision being made as deep as possible, as at *A* in the illustration.



New instrument and technic for circumcision of the tonsil: *A*, incision; *B*, grasping of tonsil with forceps.

The tonsil is then grasped as at *B* with a pair of tonsil-forceps. As gentle traction is being made with the forceps, any attachments which there may be to the posterior pillar are severed. Adhesions in the supratonsillar fossa are then cut. The anterior fossa is then dissected farther back so that the tonsil, when the operation is completed, is attached only to the pericapsular tissue.

Irrigating Tip.—Below is a drawing of an improvised urethral and bladder irrigating tip which has served me well. The tip is the hard rubber portion of a discarded stethoscope or ear piece, into which is inserted a couple of inches of glass tubing, firmly held by the use of a little cement, and to which is attached the rubber tubing of the irrigator bottle.—J. A. Van der Hulse, M.D., Akron, Ohio.



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[1] Murphy, F. G.: Circumcision of the Tonsil, Jour. Iowa State Med. Soc., 1915, v, 328.

The Child and the State.—When the state, for its own protection, compels a child to go to school, it pledges itself not to injure itself by injuring the child.—Dr. William H. Allen.

Therapeutics

PNEUMONIA

(*Continued from page 1461*)

TREATMENT

4. *The Bowels.*—The bowels should move daily. Constipation should be prevented, but a diarrhea is not desirable. A cathartic may be given in the beginning of the disease, the one preferred by the physician. Later, his preferred laxative, whether a compound aloin tablet, a cascara tablet, or some other combination, should be given, but, preferably, it should be a vegetable laxative. An occasional enema of glycerin and water, one ounce of each, will be found valuable. It will empty the colon and prevent the necessity of giving large doses of a laxative or a cathartic. Such treatment will aid in preventing tympanites.

A diarrhea will weaken the patient and add one more element to cause weakness of the heart. If it occurs, the bowels should be cleaned out with a laxative, castor oil if it can be taken, and then movements should be prevented by $\frac{1}{10}$ grain of morphin. Saline cathartics are likely to increase the amount of gas in the intestine, and hence are generally contraindicated. Bismuth is likely to remain too long in the bowels and promote the growth of germs and the absorption of toxins, which will add one more danger in the pneumonia toxemia that is constantly feared. Phenyl salicylate (salol) in 0.25 gm. doses, in capsules, may be given in these diarrheal conditions, four or five times in twenty-four hours, for a few days, and will often stop excessive fermentation.

5. *Care of the Skin and Mouth.*—It is rare, with the proper diet, the proper treatment of the bowels, and with plenty of fresh air, that the temperature in pneumonia is so high as to require sponging with cold water. Even when the temperature is very high, with a cerebral complication, tepid sponging in a warm room is as severe treatment as should be tried. Ordinarily, then, sponging once or twice a day with hot water is advisable, both for the comfort of the patient and to remove perspiration and keep the skin active. The temperature is more or less reduced by the warm sponging, the blood-vessels of the surface are slightly dilated, the circulation is equalized, and the normal activities of the skin, which are essential, are increased. Also, warm sponging tends to relieve the tension of blood in the head, and many times aids in promoting sleep. If the patient's temperature is low, hot-water sponging is certainly advisable, and hot-water bags should be used around the extremities and even around the body. Such a condition is often seen in pneumonia in alcoholics. Profuse, cold, clammy perspiration should never be allowed to remain on the patient's body. Warm alcohol sponging in such conditions is advisable, that is, sponging with pure alcohol. A dash of alcohol in a basin of water has no therapeutic or physiologic value and represents nothing but a fad.

Cleanliness of the mouth, teeth and tonsils is very important. The patient may have infected himself from his own tonsils or his own gums; such possibilities should be remembered, as well as the necessity of keeping the mouth as clean as possible during the illness. While alkaline mouth washes are cleansing and soothing, acids are more likely to kill the mouth germs; hence not only are orange juice and lemonade advisable for the salts that they contain and for stimulating the secretions of the mouth, but they may even have a germicidal value. There is no reason why a patient should not chew pieces of orange. The pulp, if swallowed, is perfectly harmless, and adds some bulk for the intestines to act on. Suppurating spots in the mouth should be touched with tincture of iodin or with Lugol's solution. Hydrogen peroxid solutions may be used in full strength for swabbing, or diluted for a mouth wash or throat gargle.

The sputum, being as likely to communicate disease as is that from tuberculous patients, or even more so, should receive the same antiseptic care as does that of tuberculosis. The patient's mouth, excretions from the nose, and the nurse's hands and contaminated clothing or gauze should be treated in the manner so well understood in tuberculosis.

GENERAL CONSIDERATIONS

Although pneumonia has been considered a self-limited disease tending to recovery, this can hardly now be said to be generally true. The sthenic type of pneumonia which does tend to recovery, with one or more lobes distinctly involved, is now not so frequent as a less circumscribed pneumonia, or an asthenic type with a low temperature and without much tendency to self-limitation and, as the statistics show, not a great tendency to recovery. The crisis which should introduce recovery means, according to Hektoen,[1] the destruction of the pneumococci in the lungs and blood. This, he says, is accomplished by phagocytosis and by extracellular digestive processes. Therefore, the greatest defense against pneumonia is a production of leukocytosis and of antibodies in the blood. Such patients as rapidly die of a toxemia have this blood defense in insufficient amount. When this defensive process has been produced in sufficient amount to destroy the pneumococci rapidly, the recovery is by crisis; when it is in sufficient amount to destroy them only slowly, the recovery is by lysis, and this latter form of recovery is the one which we now more frequently see.

If the patient does not die of the acute onslaught of the germ by incombatable toxemia, or by exhaustion from a later general toxemia, or from a migration of the pneumococci to the meninges, his survival or death depends on the ability of his heart to withstand the disease. Willson[2] states that his postmortem findings have shown, in every fatal case of pneumonia, a coincident attack on the heart muscle and a more or less destructive myocarditis; he thinks it likely that "every heart that weathers the pneumonic storm sustains similar lesions, of milder degree perhaps, yet from which it never fully recovers." This finding emphasizes the part that the heart plays in the disease of pneumonia.

Rohdenburg and Vander Veer[3] believe that pneumococci are not infrequently present in the spinal fluid in pneumonia, even when there are no distinct meningeal symptoms. It is quite possible that a slow-going pneumococcic meningitis without distinct meningeal symptoms may be the cause of some deaths that have been attributed to toxemia, that is, deaths of patients that have insomnia, delirium and high temperature without more distinct meningeal symptoms.

It has been shown by Dochez and Gillespie[4] and confirmed by Dochez and Avery[5] that lobar pneumonia may be divided into four groups by immunologic tests on animals. These latter investigators do not believe that the virulent types of pneumococci are often found in the mouths of healthy persons who have not been directly exposed to pneumonia. The germs frequently found in the mouth belong to the fourth group of pneumococci, those of low virulence, which are, however, responsible for about one fifth of the cases of pneumonia. In patients who have the more virulent type of pneumococcus the disease will be prolonged if this virulent type is found long in the mouth of the patient. Generally, after a certain number of days the virulent type of pneumococcus has disappeared and perhaps is replaced by a nonvirulent type. On the other hand, these observers often found in the mouths of the assistants and nurses the virulent type of pneumococci which they had acquired from their patients. Such nurses and attendants are certainly active carriers of this infection, and may infect others even if they develop sufficient immune bodies from such vaccination, which it really is, to prevent the occurrence of the disease in themselves. Pneumonia, therefore, seems to be, in 80 per cent. of the cases, a contact disease. Consequently, the necessity of making it a reportable disease and surrounding each case with all the preventive care that is used in other contagions is self-evident.

There is no specific treatment for pneumonia; no one treatment can be guaranteed either to abort or to shorten the disease. Some years ago veratrum viride, pushed to its cardiac depressant action, was thought to be of great benefit. More recently lauded treatments have been large doses of quinin, of salicylic acid, of potassium iodid, and of quinin and urea hydrochlorid; probably there are other drugs that have been stated to be of marked benefit. The success from these drugs must be considered more or less accidental, and but few followers of these treatments have been able to obtain the success of their founders.

That occasionally pneumonia may be aborted must be acknowledged, as the pneumococcus is found in the mouth without pneumonia occurring; hence the germ may enter the respiratory tract, causing congestion, and still the disease might abort. Doubtless many supposed aborted cases, however, were congestions of the lung in which the pneumococcus was not present.

That venesection was at one period of considerable value in pneumonia when the disease was constantly sthenic, the patient was sturdy and had a surplus of respiratory strength, is doubtless true. This treatment has apparently at times saved life. Occasionally, in an overpowering onslaught of this infection, in a strong, plethoric man, with rapid congestion and consolidation of one or both lungs, venesection may be valuable today. Such cases are becoming more and more rare.

Venesection, veratrum viride, aconite, and large doses of the coal-tar products are all more or less in disrepute on account of the almost assured heart weakness that a patient with pneumonia will develop sooner or later. Consequently, the physician dislikes to think that he may have hastened this heart failure by his treatment. The trend of the treatment of severe acute disease is the trend of civilization. The dire blood lettings, profuse vomitings, severe catharsis, then the cardiac depressants, then the coal-tar antipyretics, then the starvation, and lastly the use of alcohol to depression have all given way to the change in humanity due to civilization. The strenuous life that we lead has caused the heart and circulation to be less and less able to withstand disease and less and less able to stand severe radical treatment. Consequently, harsh methods tend to prostration and a fatal outcome in pneumonia. Conservation of energy is now the watchword in this disease.

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[1] Hektoen, L.: The Journal A. M. A., Jan. 24, 1914, p. 254.

[2] Willson, R. N.: The Journal A. M. A., Sept. 19, 1914, p. 981.

[3] Rohdenburg, G. L., and Vander Veer, Jr., A.: The Journal A. M. A., April 10, 1915, p. 1227.

[4] Dochez, A. R., and Gillespie, L. J.: The Journal A. M. A., Sept. 6, 1913, p. 727.

[5] Dochez, A. R., and Avery, O. T.: Jour. Exper. Med., 1915, xxi, 146.

(To be continued)

DOSAGE OF CALOMEL

Dr. Nathan B. Eddy, Standish, N. Y., writes:

> In The Journal (Oct. 2, 1915, p. 1183) in the department of Therapeutics under the heading, "Acute Diarrhea," it is said, "This foolish one-tenth-grain-dose-of-calomel-every-hour fad should be given a decent burial." Allow me to object.
>
> We have just been having here a *considerable* number of cases of acute diarrhea, apparently due to the defective water supply. The same general treatment was used as outlined in the article in question, except that calomel was given in divided doses, one-tenth grain in children, one-quarter grain in adults, usually at half-hour to one-hour intervals.
>
> The apparent result was that less calomel was needed for the desired effect, and, perhaps more important, where vomiting was present, the divided doses were better retained than larger single doses. Single doses were used in some cases.
>
> It seems to me there is still a place for divided doses of calomel, the article to the contrary.

There is probably no doubt that in selected cases divided doses of calomel may act satisfactorily, but it is rare that divided doses will act better than a single dose in amount carefully selected to fit the case. The criticism concerning the small-dose-of-calomel fad was aimed at the great frequency with which calomel is thus administered in hospitals in postoperative cases, without regard to the condition of the stomach or intestines, and to all young children who need a cathartic or have any disturbance whatever, and to most adults who have some intestinal disturbance. A frequent consequence of the administration of small doses of calomel, especially in postoperative cases, is nausea, vomiting, and also many times an irritation of the duodenum which lasts several days.

It takes many hours for calomel to cause purging. When it is time for the first two or three doses to cause such action, many other doses on the one-tenth-grain plan are on the way. If protracted looseness of the bowels is desired, this may be good treatment. On the other hand, even though it cannot be denied that calomel in small doses frequently repeated has a certain amount of antiseptic or germicidal action in the intestine, as is claimed, it still would seem that some other antiseptic, as phenyl salicylate (salol), would be better and safer.

The success of small doses of calomel recorded by the correspondent is not questioned. It is still urged, however, that such treatment can do harm, and it is to be deplored that calomel in divided doses is given thoughtlessly and as routine treatment without individualizing the patient and the object of treatment.

New and Nonofficial Remedies

The following additional articles have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association. Their acceptance has been based largely on evidence supplied by the manufacturer or his agent and in part on investigation made by or under the direction of the Council. Criticisms and corrections are asked for to aid in the revision of the matter before publication in the book "New and Nonofficial Remedies."

The Council desires physicians to understand that the acceptance of an article does not necessarily mean a recommendation, but that, so far as known, it complies with the rules adopted by the Council.

W. A. Puckner, Secretary.

BETANAPHTHYL SALICYLATE. — Betanaphtholis Salicylas. — Betan. — $C_6H_4.OH.CO.O.(C_{10}H_7)$. — The salicylic acid ester of betanaphthol.

Actions and Uses.—Betanaphthyl salicylate undergoes no change in the stomach, but is split up into its original compounds when it reaches the intestinal tract by the pancreatic juice and intestinal secretions. It is believed to act as an intestinal antiseptic and, being excreted in the urine, to act in a similar way in the bladder. (See general article on Naphthol Compounds, N. N. R., 1915, p. 210.)

It has the antirheumatic properties of salicylic acid. It is said to be useful in intestinal fermentations, catarrh of the bladder, particularly gonorrheal cystitis, rheumatism, etc.

Dosage.—From 0.3 to 0.5 Gm. (4 to 8 grains) in cachets, milk or emulsion.

Non-proprietary preparation: Betanaphthyl Salicylate, M. C. W.—*Manufactured by the Mallinckrodt Chemical Works, St. Louis, Mo.*

Betanaphthyl salicylate is obtained by heating betanaphthyl-sodium and sodium salicylate with phosphorus oxychloride at from 120 to 130 C.

It is a white, shining crystalline powder, colorless and tasteless, melting at 93.2 C. It is insoluble in cold or hot water or glycerin, soluble with difficulty in cold alcohol or turpentine, easily soluble in boiling alcohol, in ether, in benzene, and in warm linseed oil. In the cold it is not changed by acids or alkalies of moderate concentration. When heated with alkalies it is decomposed into its constituents, which, if the solution be acidulated, will crystallize.

It is distinguished from salol by its higher melting-point and by the production of a brownish-green color, when a trace of nitric acid is added to its yellow colored solution in pure sulphuric acid. It burns on platinum foil, leaving no residue (absence of fixed mineral impurities). If 1 Gm. of betanaphthyl salicylate be shaken with 30 Gm. of boiling water and filtered through a moistened filter, the filtrate should not have an acid reaction (absence of salicylic, hydrochloric or phosphoric acid), nor should it after cooling show a crystalline deposit (salicylic acid or betanaphthol); nor should it become turbid on the addition of silver nitrate (chlorides or phosphates) or barium nitrate (absence of sulphate), nor should it give a violet color with solution of ferric chloride.

Proprietary Preparation:

BETOL.—A name applied to betanaphthyl salicylate.
Manufactured by Merck and Co., New York.

Classification of Tropical Diseases

Escomel publishes in the *Cronica Medica*, 1915, xxxii, 150, a study of blastomycosis in man in Peru and Bolivia. It is accompanied by eight illustrations of two typical cases, and he declares that there is unwarranted confusion in the nomenclature of tropical diseases, especially in Peru and Bolivia. Cases have been grouped as uta, espundia, buba, etc., when in reality all these tropical diseases of the skin and mucous membranes should be classified as leishmaniasis, with or without flagellates, syphilis, tuberculosis, pain, or blastomycosis, "the latter constituting," he remarks, "the most extensive and the cruellest chapter of pathology in our tropical region." The dictionaries define blastomycosis as saccharomycosis, that is, any disease condition due to a yeast-fungus. In his two cases the skin around the mouth and the mucosa of the upper air passages were mainly affected.

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SATURDAY, OCTOBER 30, 1915

THE ANTIFERMENTS OF THE BLOOD

The Abderhalden test for the presence of specific enzymes in the blood, which has frequently been referred to,[1] has awakened interest not only in the possibilities of practical application which it represents but also in its relation to the underlying principles of immunity. Even a cursory review of the literature of the subject will indicate that Abderhalden's views have not gone unchallenged and his contentions have not remained without contradiction. The differences have ranged from the complete denial of the phenomena themselves to the mere expression of doubt as to the validity of their interpretation.

It will be recalled that according to Abderhalden the injection of foreign proteins of any kind into the blood leads to the prompt formation and appearance in the blood of enzymes which can digest proteins of the sort introduced, but not any other kinds. In the case of pregnancy, for example, it is postulated that placental protein finds its way into the maternal circulation. As a result, the blood serum of the pregnant woman or other mammal acquires the property of digesting proteins prepared from placental tissues. This fact has been applied to the detection of pregnancy. In a similar way a comparable serum test for the detection of cancer has been devised with protein derived from carcinomatous tissue. The underlying postulate in all these cases is that the body can generate new enzymes which will attack only certain native proteins.

Jobling[2] and his collaborators at the Vanderbilt University, Medical Department, in Nashville are among those who take exception to this assumption of the genesis of specific enzymes, and they seek to explain the phenomena in a quite different manner. It is known that the blood may contain not only proteolytic enzymes but also antienzymes. Protein-digesting ferments are frequently liberated from cells such as the white corpuscles of the blood, but their digestive capacity is inhibited by the presence of antiferments in the blood. Proteolytic enzymes are present in the blood under a variety of conditions, but they are not specific and they become evident only when the antienzyme has been removed. According to Jobling and others, normal human serum rarely contains strong proteolytic enzymes and therefore does not give a positive Abderhalden reaction. On the other hand, serums of pregnant women, of patients with pneumonia, or with cachexia due to certain causes do contain ferments and will give positive Abderhalden reactions. Such tests can be obtained with all human serums containing much proteolytic ferment, regardless of the disease from which the patient is suffering, not only with placental tissue but also by removal of the antitrypsin by suitable methods. In the case of the pregnancy test a positive reaction is due to the adsorption of the antienzyme by the placental tissue used or by the bacteria. The enzyme is merely permitted thus to act on the unprotected serum protein. The digestive reaction, as several investigators have insisted, is exerted, in all cases of positive test, on the serum itself, rather than on the foreign substance added.

Extensive investigations have shown that a variety of ether-soluble substances or products derived from them can act as ferment-inhibiting agents. This is particularly true of soaps of some of the fatty acids. Jobling and Petersen[3] have shown that they can be prepared from the tubercle bacilli and tuberculous caseous material. They suggest that the production of the latter in tuberculosis must be partly due to the presence of substances which inhibit the action of the enzymes set free as a result of the disintegration of the cells. Further experiments have shown that it is the fatty acids of the unsaturated type which are endowed with the antitryptic power. In caseous material from tuberculous lymph glands and from caseous pneumonia, ferment-inhibiting substances were also identified as compounds of unsaturated fatty acids.

The association of the unsaturated carbon bonds with the antitryptic power has been made even more likely by the fact that treatment with iodin or hydrogen peroxid, which changes the desaturation of the fatty acids, also destroys their antiferment activity. Jobling and Petersen relate these facts to the action of iodid in tuberculosis. Caseous areas often may be present in the lung, but unless they open into the air passages, tubercle bacilli may be absent from the sputum. If iodids are now given, the antiferments are destroyed, proteolysis can proceed, and the caseous matter begins to soften and is more likely to rupture into the bronchi so that bacilli are then discharged with the sputum.

With the establishment of the contention that the activity of fatty acid derivatives (soaps) as ferment-inhibiting agents is dependent on the degree of unsaturation and "iodin value" of their fatty acids, has come the attempt to discover whether all antitryptic agencies in the body are of this lipoidal character. It is now known that the antitryptic power of serum is almost entirely removed by extraction with an organic solvent such as chloroform or ether. Furthermore, serums become far more toxic when their antifermentative potency is thus destroyed, perhaps because the enzymes in them are then given full scope to produce poisonous digestion products from the unprotected serum proteins. Applications of the principle involved to other problems in immunology will suggest themselves.

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[1] A Biologic Diagnosis of Pregnancy, editorial, The Journal A. M. A. May 25, 1912, p. 1604; The Blood Test for Pregnancy, Dec. 7, 1912, p. 2073; The Present Status of Abderhalden's Serodiagnosis, Aug. 16, 1913, p. 493; Abderhalden's Test in Cancer, Oct. 18, 1913, p. 1461.

[2] Jobling, J. W., and Petersen, W. F.: A Study of the Ferments and Antiferments of the Body and Their Relation to Certain Diseases, Bull. Johns Hopkins Hosp., 1915, xxvi, 356.

[3] Jobling, J. W., and Petersen, W.: Jour. Exper. Med., 1914, xix, 239 ff.

CAMPHOR, NATURAL AND SYNTHETIC

It is reported that the first, and, so far, the only productive camphor plantation in the United States (that at Satsuma, Florida) distilled its second year's crop this spring.[1] The yield is said to be satisfactory. Smaller plantations in various parts of Florida will soon come into bearing. This is the result of a government campaign begun twelve years or so ago. It is expected that more and more land will be set out in camphor, and that this country may soon (perhaps within a decade) be independent of foreign camphor producers.

Before the camphor monopoly becomes a page of forgotten history, some writer with an eye for the romance of actuality should record its life-and-death struggle against the synthetic camphor industry. The camphor of commerce is now obtained chiefly from Japan and the island of Formosa, to both of which regions the camphor laurel (*Cinnamomum camphora*) is indigenous. After taking possession of Formosa, Japan gradually brought under control the fierce head-hunting tribes that had previously made camphor gathering almost impossible there, and in 1899 made the industry a government monopoly, which in 1903 was extended to Japanese camphor. The Japanese captured the world's camphor market, reaping, it is said, huge profits, which reached their climax in 1906-1907, when camphor brought as high as $80 per picul of 130 pounds.[2] Meanwhile, a rival industry was growing up in Germany. In 1870 it became known that synthetic camphor could be manufactured from oil of turpentine. This was converted: (1) into pinene hydrochlorid; (2) into camphene; (3) into isoborneol, and (4) into camphor.[3] In 1905, the growing importance of camphor in the production of celluloid and other substances stimulated the first important attempt to produce synthetic camphor for the market. The idea captivated the imagination of chemists, and the production of synthetic camphor became one of those crazes which blast hopes and wreck fortunes. Over two hundred patents were taken out; by 1908 the synthetic camphor industry, favored by temporary business conditions, was able to deal a serious blow at the Japanese natural camphor trade. The Japanese rallied, however, and, by underselling wherever their trade was threatened, regained control of the market. In 1909 the German synthetic camphor industry, though not killed, was so crippled (being also hampered by the fluctuations in the supply of turpentine oil) as no longer to endanger Japanese supremacy.[4] On account of our plentiful supply of turpentine oil, the manufacture of synthetic camphor has been regarded as a promising field for enterprise in this country. American turpentine oil ranks next after the French as a base for synthetic camphor, in the opinion of German manufacturers.

The chemical formula for natural and synthetic camphor is the same, $C_{10}H_{16}O$. The two substances are best distinguished by the polarized light test. Natural camphor from the camphor laurel[5] rotates polarized light to the right, whereas synthetic camphor, which is composed of dextrorotatory and levorotatory camphor, is optically inactive. This opposite rotation in two bodies identical in the number and kinds of atoms in the molecule is supposed to indicate a reverse arrangement of atoms or atomic groups, so that the two isomers correspond to each other like the right and left of a pair of gloves. In many instances this reverse structure is accompanied by an as yet inexplicable difference in medicinal activity. Thus, when synthetic epinephrin was first placed on the market, it was found to have but half the clinical activity of natural epinephrin. Natural epinephrin is levorotatory; the synthetic product then marketed was optically inactive, being a mixture of dextrorotatory (*d*) and levorotatory (*l*) epinephrin. When their attention was called to the differences between natural and synthetic epinephrin, the manufacturers of the latter were able to produce a satisfactory article by separating out and discarding the *d*-substance, which was only one fifteenth as powerful as the *l*-product in its effects on the blood pressure.

A similar gradation in the effects of levorotatory, inactive and dextrorotatory camphor has been reported,[6] *l*-camphor in massive doses strongly stimulating the central nervous system of frogs, the optically inactive (synthetic) camphor producing a less marked reaction, and the *d*-camphor (the natural product) a still weaker one. The *l*-camphor is said to be more toxic than *d*-camphor.[7] The present war, by cutting off from Germany the supply of Japanese camphor, has naturally stimulated among German clinicians an interest in the possibility of substituting artificial for natural camphor in medicinal use. The government therefore recently ordered clinical tests made. Synthetic camphor, used externally and in moderate doses internally, has been reported as having the same effects as natural camphor.[8] The published clinical reports, however, are few and the details are somewhat meager. The announcement of a manufacturer that synthetic camphor has been fully established as equal in medicinal value to natural camphor therefore appears premature. The substitution of synthetic camphor for the natural product in medicinal use seems unwarranted where no necessity exists, at any rate, until the discrepancies in the evidence have been cleared up. Even Levy and Wolff,[8] who report having found the former a satisfactory substitute for the latter product, warn against using more than 1 gm. in a single dose, on account of the greater toxicity of the artificial substance.

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[1] Our Beginnings in Camphor, Scient. Am., Jan. 16, 1915, p. 71.

[2] Camphor Industry in Foreign Countries, Dept. Comm. and Labor, Bur. Man., Spec. Cons. Rep., 1910, xliii, Part III.

[3] Thorpe's Dictionary of Applied Chemistry, Vol. I, art. Camphors, p. 619.

[4] Report for 1909 of the Elder Merchants of Berlin, quoted in Camphor Industry in Foreign Countries (Note 2).

[5] A natural camphor is known which, though otherwise identical with ordinary camphor, rotates polarized light to the left. This *l*-camphor occurs in the volatile oil of feverfew (*Pyrethrum parthenium*) and in the oil obtained from the fresh twigs and leaves of *Artemisia nana*. (Thorpe's Dictionary of Applied Chemistry, Vol. I, art. Camphors, p. 620.)

[6] Langgaard, A., and Maass, T. A.: Therap. Monatsh., November, 1907, p. 573, quoted by Bachem, C.: Med. Klin., April 11, 1915, p. 425. Sassen (Inaug. Diss., *Bern*, 1909, *also* quoted by Bachem) was unable to confirm these observations. Langgaard and Maass found but slight differences in the effects of the different *forms of* camphor given in moderate doses; all the effects produced were on poisoned animals. Grove (Jour. Pharmacol. and Exper. Therap., January, 1910, *p. 445*), in experiments on frogs and white rats, found that the pharmacologic action of the three kinds of camphor differed not in kind, but merely in degree. Mammals were about three times as susceptible as frogs to the action of all forms of camphor.

The pharmacologic evidence with regard to camphor is confused and contradictory, and the clinical evidence is naturally still more so. On the subject of the clinical value of natural camphor there are many diametrically opposed opinions. While in Europe camphor is widely used for its circulatory actions, especially in threatened cardiac failure, certain English and American observers[9] have been unable to detect any action from camphor which would justify reliance on it as a cardiac stimulant. Further observations are much to be desired.

THE MANAGEMENT OF DIABETES

Last week's issue of The Journal[10] contained a brief historical survey of the purpose which has permeated some of the methods of dietotherapy in diabetes, particularly those which have involved the use of considerable amounts of carbohydrate-containing foods. As is so often the case in medicine, the intent of some of these procedures has been either misunderstood or not taken into consideration at all by those who have attempted to apply them to the human patient, and the results have frequently been unexpected failures. Many physicians have inaugurated the "oatmeal" treatment in the regimen of a diabetic without appreciating that its field of usefulness is admittedly limited, and that it represents, not a permanent sort of dietary, but a vigorously and intelligently instituted temporary mode of therapy intended to develop an increase of carbohydrate tolerance and to diminish a severe impending acidosis and ketonuria. None of the "cereal treatments" were originally intended to be permanent unvaried dietary procedures. A careful study of the recommendations of those who proposed them would have dispelled the false claims and irrational practices.

The warning to insist on an intelligent appreciation of the aim and method alike of any new procedure in therapy may not be amiss in relation to the treatment of diabetes by prolonged fasting—a method advocated by Dr. F. M. Allen,[11] now of the Rockefeller Institute of Medical Research. It is the more timely because a fundamental factor in the new plan consists in a larger share of education for the patient and a smaller element of nursing or hospital life.

A competent American student of diabetes has succinctly summarized the intent of the new procedure as follows: Fasting and a low diet have long been known, but it is only fair to give Allen the credit, first, of seeing the therapeutic significance of inanition in a severe case of diabetes; second, of proving on diabetic dogs that prolonged fasting would render them sugar-free, and, third, of having the courage of his convictions and applying this principle to human diabetics.[12] The ideal of treatment in this disease is a sugar-free and acid-free urine. Present experience indicates that the glucosuria in cases of even the severest type of diabetes may with advantage be cleared up by one initial fast. The necessary duration may sometimes be as long as eight or ten days. Under these conditions, contrary to the general impression, the severe acidosis of diabetes is markedly reduced. Allen has expressed the situation by saying that, broadly speaking, freedom from glucosuria seems attainable in all cases of uncomplicated human diabetes before there is danger of death from starvation.

Heretofore the fasting in cases of diabetes has been of brief duration. The loss of body weight has usually been feared as a dangerous depletion of reserve energy; and in the presence of severe acidosis, carbohydrates, though poorly tolerated, have been depended on to bring relief from this condition. In the milder types of diabetes the usual measures used in diabetic therapy, namely, restriction of carbohydrate or protein and brief fasting, if necessary, suffice to keep the patients sugar-free, and in good condition. Such measures notably fail in the severer types. The fundamental significance of Allen's treatment, involving a suitable initial fast, lies in the belief that if glucosuria and hyperglycemia are prevented, the damaged internal function of the pancreas, on which the utilization of sugar ultimately depends, is protected, and rest becomes possible. Structural losses cannot be repaired; but it is reasonable to assume that if there is a "functional" element in the etiology of human diabetes, a complete rest of the weakened function may both permit and facilitate recovery.

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[7] Pari (Sull' azione fisiologica delle canfore isomere, Gazz. d. osp., March 15, 1908; quoted by Levy and Wolff, Note 8) found *l*-camphor thirteen times as toxic as *d*-camphor. Grove (Note 6) found dextrocamphor *three-fourths as toxic for frogs as the* levo form, while the inactive camphor occupied a middle position.

[8] Levy, Margarete, and Wolff, Walter: Camphertherapie mit künst-
-pher, Therap. d. Gegenw., March, 1915, p. 88. Kaufmann,
1. A Biolo endung des synthetischen Kampfers in der Dermatologie,
A. M. A. May 2 Wchnschr., March 2, 1915, p. 319.
1912, p. 2073; The stance, Heard and Brooks (Am. Jour., Med. Sc.,
16, 1913, p. 493; Al 238), who in clinical trials failed to obtain any effect
2. Jobling, J. W., as 50 grains injected subcutaneously in oil.
Antiferments of the Ln Diabetes, editorial The Journal A. M. A.,
ohns Hopkins Hosp., 1.

[11] Allen, F. M.: Studies Concerning Diabetes, The Journal A. M. A., Sept. 12, 1914, p. 939; Boston Med. and Surg. Jour., Feb. 18, 1915; Prolonged Fasting *in Diabetes, Am. Jour.* Med. Sc., *1915, cl, 480.* Joslin, E. P.: Present-Day Treatment and *Prognosis* in Diabetes, ibid., p. 485. Hill, L. W., and Eckman, Rena S.: The Starvation Treatment *of* Diabetes, *with a Series of* Graduated Diets as Used at the Massachusetts General Hospital, *Boston*, W. M. Leonard, 1915.

[12] *Joslin, E. P.: Present-Day Treatment* and Prognosis in Diabetes, Am. Jour. Med. Sc., 1915, cl, 485.

The policy of Allen's method involves "prompt and lasting freedom from glucosuria and acidosis" not only in mild and incipient cases but also in all diabetic patients, even the severest. This represents a far more radical treatment than any hitherto proposed. The avoidance of acidosis means the elimination of the necessity of administration of objectionable alkalies often given in very large doses. The danger of coma is correspondingly reduced. The subsequent carefully selected diet is intended to maintain the advantage of freedom from intoxication at any cost. Therefore, instead of attempting to increase the weight of the somewhat depleted patient and maintain it at the highest possible level, as has so often been attempted, the aim is to keep the weight low in the belief that the reduction is beneficial to the diabetic. Any gain which brings back glucosuria or ketonuria must be checked. From this point of view, it becomes necessary on the return to restricted diet to test the patient's tolerance not only to carbohydrate but equally well to fat and protein, and to keep within it. During the fasting periods, alcohol may be given until the ketonuria disappears. This is not absolutely essential, though alcohol appears to be valuable and does not produce glucosuria.

Although it is perhaps too early to grow unduly enthusiastic with respect to the success of the treatment by initial fasting, enough favorable reports have been recorded to designate the outlook as one of promise. Dangerously weak and emaciated patients have borne the fasting with apparent benefit, "giving the impression that they have been suffering more from intoxication than from lack of nutrition." Many of the dangers which suggested themselves have *not* arisen or have been successfully managed by those who have tested the method. After all, under any dietary plan the most important feature is to educate the patient so that he can carry out a dietary scheme with intelligence. Until the physician himself knows foods as well as he knows drugs, it is useless to expect dependable results from those in his care. Too often he is hopelessly bewildered when there is need of suggesting a "diet list." Green corn and celery, bananas and cucumbers are all in the same vegetable category in his mind. A radical treatment which removes polydipsia, secures relief from polyphagia and makes the patient feel better is always welcomed by the individual; but the treatment cannot be expected to succeed unless it can be intelligently prescribed.

Aside from the advantages of comfort and simplicity, the ultimate prognosis of diabetes on the basis of the new treatment must depend on the question whether diabetes is an inherently progressive disease or "the simple weakness of a metabolic function." Rest and restoration may succeed in one case; repair may fail in the other. Joslin has come to feel that coma no longer represents the culmination of diabetes, but that it is an avoidable accident. Whatever the ultimate outcome, Allen's treatment is believed, in his own words, to remove the glucosuria and acidosis more quickly and surely than has been the practice heretofore, and to enable patients to do better when these symptoms are removed than when they are allowed to continue. Any plan which holds out prospects like these for severe diabetes deserves to be studied carefully, to say the least.

LUMBAR PUNCTURE IN DELIRIUM TREMENS

The belief is becoming more or less general that the final factor in the production of delirium tremens is a marked increase in the pressure of the spinal fluid. Schottmüller and Schumm[1] found a marked elevation in the pressure of this fluid in 80 per cent. of the cases of acute alcoholism examined by them, and in one instance they drew as much as 100 c.c. with no unfavorable reaction. Steinebach[2] found a similar condition in 75 per cent. of patients with alcoholic delirium, and in the remainder there was a relative increase in the pressure of the fluid. That this increased pressure may be responsible for the delirium and is not merely a condition which accompanies chronic alcoholism is indicated by the fact that increased pressure is not found in alcoholics before or after an attack of delirium tremens, nor do habitual drinkers who are not suffering from acute alcoholism or who have not had delirium show an increased pressure. Further, in animals killed during a state of acute alcoholism, Braun[3] has demonstrated an internal hydrocephalus and an inflammatory infiltration of the pia. Finkelnburg[4] found, in dogs which had been given from 2.3 to 3.3 c.c. of alcohol per kilogram of weight, a maximum increase in the spinal fluid pressure of 72 per cent. This increase began from twenty to thirty minutes after the animal became intoxicated, reached its greatest height in from one and one half to three hours, and remained high for several hours. He believes that similar conditions obtain in acute alcoholism in man, and that the headache, hyperesthesia of the skin, dizziness and other nervous phenomena following a debauch are due to this increased pressure and to the internal hydrocephalus which accompanies it.

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[1] Schottmüller and Schumm: Nachweis von Alkohol in der Spinalflüssigkeit, Neurol. Centralbl., 1912, xxxi, 1020.

[2] Steinebach, R.: Ueber die Zerebrospinalflüssigkeit and über die Wirkung der Lumbalpunktion beim Delirium potatorum, Deutsch. med. Wchnschr., 1915, xli, 369; abstr., The Journal A. M. A., May 8, 1915, p. 1620.

[3] Braun, cited by Bumke: Die exogenen Vergiftungen des Nervensystems, Handbuch der Neurologie von Lewandowsky, 1912, iii.

[4] Finkelnburg: Experimentelle Untersuchung über den Einfluss des Alkohols auf den Hirn-Rückenmarksdruck, Deutsch. Arch. f. klin. Med., 1904, lxxx, 130.

If delirium tremens is due to increased pressure, the lowering of the tension by lumbar puncture should cause an improvement in the patient's condition. In this regard Steinebach's results are to the point. In every case the delirium grew milder; frequently it ended entirely. The disorientation as to time and place usually remained for a while. In two instances the delirium returned. Following a second puncture, an increase in the pressure was again found and the delirium soon abated. In the total series of eighteen cases, the average duration of muscular unrest following lumbar puncture was from three to four hours, and of delirium, twenty-four hours. In thirty-three cases in which lumbar puncture was not done, the average of the restless days was four, and of the delirium, five days. Thus, through lumbar puncture the duration of delirium was shortened 60 per cent. and the restlessness 75 per cent. This series of cases was punctured during the first twenty-four hours of delirium. Of the cases that were punctured on the second day following the onset of the delirium, improvement occurred less rapidly. Here the average duration of restlessness was from six to seven hours, of mental confusion twenty-four hours, and of delirium, eighty hours.

The manner of action of lumbar puncture in delirium tremens has been thought to be the same as that described by Quincke for puncture in acute serous meningitis. If the interventricular pressure reaches a certain point, the usual channels of escape for the spinal fluid become occluded. Then, by lumbar puncture, the hypertension is released and healing begins. Certain facts, however, make another explanation necessary. First, lumbar puncture works equally well in cases which show only a relative increase in pressure. Second, Steinebach found that after the withdrawal of the spinal fluid in these cases, the reinjection of from 15 to 20 c.c. of physiologic salt solution gave even more beneficial results. These facts indicate that there is probably some toxic irritant present in the spinal fluid. Accepting this view, the best treatment of delirium tremens is a spinal puncture which releases the pressure and removes part of the toxic substance and a dilution of what remains by the injection of salt solution.

The nature of this toxic substance is not known. In approximately 80 per cent. of these studied cases, alcohol or one of its derivatives has been demonstrated in the spinal fluid by the iodoform crystal test. Finkelnburg has shown experimentally that alcohol reaches a higher concentration and remains for a longer time in the spinal fluid than in the blood. While this may play a rôle in the increased pressure associated with acute alcoholism, it does not in the production of delirium, because delirium frequently begins during a period of total abstinence, and in such cases no alcohol can be demonstrated in the spinal fluid. Alcohol is apparently one of the substances which has an affinity for nervous tissues. It is secreted by the choroid plexus into the cerebrospinal fluid, but its presence there is a result of large amounts of alcohol recently consumed and is not the final factor in the production of delirium.

The most important therapeutic effect of lumbar puncture in delirium is stopping restlessness and muscular exertion, since that minimizes the chances of cardiac failure. The best results seem to occur in pneumonia when early puncture is made, and here a sparing of exertion is, of course, essential.

THE KIDNEY AND SUGAR EXCRETION

The average normal sugar content of the blood may be expressed, in round numbers, as 0.1 per cent. of glucose. Although the kidney cells are continually bathed with a sugar solution of this concentration, none of the carbohydrate passes them so as to reach the urine. There are other substances which may enter the blood stream in minutest doses — in quantities far smaller than those represented by the circulating sugar — yet they promptly make their appearance in the kidney secretion. As soon as the glucose concentration in the blood is slightly raised to the point commonly designated as hyperglycemia, sugar is likely to appear in the urine. Here is a group of undoubted facts that are not easy to explain. If all readily diffusible substances that find their way into the circulation could be found in the renal secretion, as various inorganic salts and urea are, this feature would be easy of interpretation. If it could be demonstrated convincingly that certain substances fail ordinarily to get into the urine because the renal cells are impermeable to them as they seem to be for colloids like the proteins, this, too, could readily be understood. But the so-called threshold phenomenon — the fact that glucosuria is dependent on a more or less pronounced rise in the concentration of a substance ordinarily present in the blood at all times — has been a stumbling block for a diversity of physiologic hypotheses.

One of the first contributions from the newly equipped James Buchanan Brady Urological Institute of the Johns Hopkins University and Hospital[1] offers an explanation of the problem in what appears to be a tenable and demonstrable form. The authors, Peirce and Keith, remind us of two unquestioned facts, namely, that the kidney uses a relatively large amount of oxygen, and that glucose is one of the main sources of energy in the body. It is therefore very probable, they argue, that the kidney normally oxidizes a certain amount of glucose. Hence, even if the boundaries of the renal cells are permeable for this sugar, not all of the glucose that penetrates into the cell will reach the lumen of the glomerulus or kidney tubule. The assumption is accordingly made that sugar normally gains entrance into the kidney cells in proportion to its concentration in the blood. There is no contention that the cell boundaries are in any way impermeable or permeable with difficulty to sugar. During its passage through the cell, some of the glucose is oxidized, as we might expect, and if not too much has entered, it will be oxidized in its entirety and none will appear in the urine.

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[1] Peirce, G., and Keith, A. M.: The Excretion of Sugars by the Kidney, Proc. Soc. Exper. Biol. and Med., 1915, xii, 210.

Are there any facts in corroboration of this hypothesis? We may cite a few instances contributed by Peirce and Keith: The hourly oxygen requirement of the kidneys has been determined approximately by physiologists. It is found to be of a sufficient magnitude to produce complete oxidation of all the sugar which the kidneys might be expected to excrete if they were completely permeable to sugar. Again, if the kidney cells are actually permeable to sugar, which they in turn burn up, then the sugar content of the renal vein should be lower than that of the arterial blood entering the kidney. This, likewise, is found to be true. Finally, Peirce and Keith are finding that only the sugars which are oxidized by the body will show the so-called threshold phenomenon. They venture the added statement that if the kidney is permeable for a sugar when and only when its concentration in the blood rises beyond a certain level, that sugar is oxidized by the kidney. Carried to its logical consequence, this may be interpreted to mean that any substance which finds its way through the kidneys into the urine, only when its concentration in the blood rises above a certain level, belongs to compounds metabolized by the renal tissue. We shall await further demonstration.

The Autonomic System.—In the average healthy individual there is maintained an equilibrium between these two systems, the autonomic and sympathetic, subject to all the physiologic variations and physical needs of the body. This balance is kept up through the constant stream of stimuli arriving by the nerve paths and also by the direct chemical actions on the system, of hormones from the internal glands, or elsewhere. The points of possible intervention are so innumerable and the variety of stimuli is so great that it seems hopeless ever to be able always to diagnose accurately either the point or nature of the intervention. In marked variations from the normal, one finds many cases which show a pronounced tendency to an over or under action of one or the other system; and by keeping in mind the symptoms of hypertonus or hypotonus of the sympathetic or the autonomic system one finds many individuals who may be classed either as having a vagotonic or autonomic constitution or a sympathicotonic constitution.—J. W. McIntosh, M.D., *Canad. Med. Assn. Jour.*, September, 1915.

Current Comment

OSTEOPATHS AND THE HARRISON LAW

As anticipated, the federal government is having much difficulty in the administration of the Harrison law, owing to the fact that there is no uniform standard as to what constitutes the practice of medicine in the different states. Not only the definitions and provisions of the statutes, but also the decisions of various courts of last resort differ widely on this point. In some states, osteopathy is included in the practice of medicine; in other states, it is legally distinct. The dilemma of the Treasury Department is apparent from its conflicting rulings. Treasury Decision 2232, recently issued, revokes Treasury Decision 2172 and substitutes the following ruling: "Osteopaths should be permitted to register and pay special tax under the provisions of the act of Dec. 17, 1914, provided they are registered as physicians or practitioners under the laws of the state and affidavit is made in application for registration on Form 678 as required by Treasury Decision 2215 of June 10, 1915." This form is the one used by all physicians, and contains a statement sworn to by the applicant that he is practicing medicine at the time of making application. The intent of the Treasury Department in this ruling is obvious. If the ruling had provided for the registration of osteopaths in those states in which they are legally recognized as physicians, there would be no ground for criticism. The inclusion of the term "or practitioners," however, leaves the entire question open to argument. What does the Treasury Department mean by "a practitioner?" This might include Christian Scientists, clairvoyants, seventh sons of seventh sons, and every other fad or form of quackery. But the decision is of slight importance, after all. Suppose osteopaths are allowed to register under the Harrison law. What of it? Such registration will not give them the right to practice medicine, unless they are given this right by the law of the state. Registration under the Harrison law will not confer any right to practice medicine not given by the statutes of the state.

THE DISCOVERY OF ETHER ANESTHESIA

In a recent review of the controversy over the priority of the discovery of ether for anesthetic purposes, Dr. Allen J. Smith[1] has presented, in facsimile, the documentary evidence bearing on Dr. Crawford W. Long's work. Altogether there are eleven pages of photographic reproductions of letters and attestations of various kinds, including particularly the page from Dr. Long's account with James Venable, a patient who permitted Dr. Long, March 30, 1842, to administer ether to him. This was done with the understanding that when Venable had become unconscious, the surgeon was to remove one of two small tumors (wens) on the back of his neck, which, because of apprehension of pain, he had declined to have removed previously. There was the further understanding that if the first tumor was removed without pain under ether anesthesia, then the surgeon was to remove the second. June 6, accordingly, the second operation was performed, permission to do it serving as a demonstration of the success of the first operation. The patient was charged $2 each for "extracting the tumor" and 25 cents each time for the ether. This item from Dr. Long's account book is certified under the hand and seal of P. F. Hinton, the clerk of the Superior Court of Jackson County, Ga., as being "a correct copy of an original entry made in his book for medical services for the year 1842 by Dr. Crawford Long." As C. F. Jackson of Boston, the only other person whose claims for the honor of the discovery of ether anesthesia merit consideration, did not communicate his ideas on the subject to any one until 1843, and then merely verbally to a number of medical friends, and did not suggest it until 1845 to Dr. W. T. G. Morton, who applied it successfully in 1846, the dates in the ether priority controversy are thus cleared up. The other question sometimes discussed, whether or not Dr. Long really appreciated his great discovery, and the assertions often made that he failed to make it known or abandoned the use of ether anesthesia, are all answered by these reproductions, which show very clearly that he continued to use it and to demonstrate its efficiency in spite of opposition on the part of members of the profession around him who could not bring themselves to recognize what a great discovery had been made. The originals of these documents are in the custody of Mrs. Taylor of Athens, Ga., a daughter of Dr. Long. The photographs are deposited in the archives of the University of Pennsylvania, School of Medicine, of which Dr. Long was a graduate. Dr. Smith's reproduction of them in his article[1] has made it possible for practically any one to consult the original documents in the case.

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[1] Smith, Allen J.: Old Penn, Oct. 2, 1915.

SOCIAL INSURANCE IN CALIFORNIA

The appointment by the governor of California of a commission to study social insurance, and the appropriation of $20,000 for the purpose, is an evidence of the growing interest in this subject. The commission, consisting of five members, is not only directed to study social insurance systems at home and abroad, but is also empowered to recommend schemes for adoption by the state. California has just included occupational diseases within the scope of its workmen's compensation act, and the next logical step is the introduction of an insurance scheme to care for all sickness among wage earners. The more efficient medical care which a system of health insurance would provide for the workers of California is as greatly needed as it was in Great Britain. With the initiation of medical benefit under the British compulsory insurance system, many persons for the first time were able to afford the luxury of medical attention, and for the first time physicians were able to treat disease in its incipient stages among the industrial population. English physicians are expressing their surprise at the mass of suffering which previously was uncared for. The failure of many persons in this country at present to receive medical care constitutes the best argument for a change to the more effectual provision for medical attention offered by health insurance. At this time, when attention is being focused on these forms of insurance new to this country, the American Association for Labor Legislation, after three years of careful study, has prepared the draft of a health insurance bill which, it is announced, will be introduced into several legislatures next winter. This activity justifies the prophecy, previously made by The Journal, that the enactment of workmen's compensation laws would lead to new measures for both health and accident insurance.

DR. JAMES TAGGART PRIESTLEY—A FESTSCHRIFT

In commemoration of his forty years of practice, Dr. James Taggart Priestley, of Des Moines, has been honored by the issuance of a special number of the *Journal of the Iowa State Medical Society*, styled a "Festschrift." It has been done under the auspices of the Medical Library Club of Des Moines. Dr. Priestley well deserves this honor. As is said editorially in the Iowa journal, "the man who can live a generation or more in the sharpest competition, and retain the affection of his associates, is indeed entitled to expressions of the highest regard as distinctly his own. It is delightful to feel that honors gained by manly struggles for the rightness of things may come at a time of mental and physical well-being, and not after the recipient has passed to a state of indifference." Dr. W. L. Bierring gives a brief historical sketch of Dr. Priestley's illustrious great-great-grandfather, Joseph Priestley, the discoverer of oxygen, who, it will be remembered, spent the last ten years of his life at Northumberland, Pa., continuing the work in science which he had carried on in his native England. Dr. Priestley has well maintained the traditions of his family as a scientist, a man of character and strong individuality, and a leader in his sphere of action. In his long career as a practitioner in Des Moines, his impress has been for the uplift of the science and art of medicine, and for the betterment of fraternal relations in the profession itself. This number of the Iowa state society journal is a credit to those who conceived, as well as to those who carried out, the idea — and to the state society itself. It is splendid from a mechanical standpoint, and decidedly creditable in its contents.

HOSPITAL NOISES

The inhabitant of a large community who is without the experience of a temporary residence in one of its hospitals feels a sort of humanitarian pride in the now familiar signs, "Hospital Street — Make No Unnecessary Noise!" A brief stay in some of these institutions is sometimes sufficient to convince one, however, that the faults of others often seem more patent than our own which are nearer at hand. This applies all too often in particular to the subject of hospital noises, which, unfortunately, have not yet everywhere received the degree of consideration and correction which they demand. Few persons who have not given serious thought to the matter will realize the endless sources of noise, which is never soothing to a patient, and not infrequently is the occasion of intense psychic irritation to even the most docile inmate of a municipal health institution. Dr. Byam Hollings[1] of the Massachusetts General Hospital has recently pointed out some of the unappreciated noise factors, which will be recalled by the initiated through the mere mention of a word or two. Doors and elevators are rarely noiseless; windows and floors may creak and reverberate; chairs and ward utensils are famed for squeaks and rattles; the slam of dishes is rarely soothing, and the sound of bells and buzzers never reaches an immune auditor. To all of these and many other varied disturbances must be added the multitude of sounds and noises which are traceable to the human element—nurses, orderlies, porters, employees, visitors, physicians and patients themselves. Dr. Hollings reports that in a routine day more than 3,500 persons passed through a doorway in the main corridor of one of the buildings of the Boston hospital. It is thus easy to see how noise can be created. How to minimize it is a timely problem in every institution.

A LOSS TO THE PUBLIC HEALTH SERVICE

As mentioned in our news columns, Dr. John F. Anderson has resigned the position of director of the Hygienic Laboratory of the U. S. Public Health Service to accept that of director of a commercial biologic laboratory. The Public Health Service has sustained other similar losses recently: Dr. M. J. Rosenau, Anderson's predecessor, resigned to accept the professorship of preventive medicine and hygiene at Harvard; Drs. Reid Hunt and Worth Hale left the service to accept the positions of professor and assistant professor of pharmacology, respectively, at the same institution. It may seem discouraging that the Public Health Service should thus be deprived of the services of able men at the period of their greatest usefulness; at the same time, it is gratifying to realize that educational institutions, as well as some private manufacturing concerns, appreciate the value of such men. While occurrences like these must be discouraging to those who are interested in seeing the Public Health Service successful in its splendid scientific research work, it is a consolation to realize that the service is developing men whose work is appreciated.

TETRACHLORETHANE

Several months ago, attention was directed to the occurrence of an unusual illness among the workmen in some of the aeroplane factories of Great Britain.[2] As a rule, the varied symptoms included a general malaise and drowsiness, followed by more or less severe toxic jaundice. An investigation has revealed that this untoward condition is due to intoxication with tetrachlorethane or acetylene tetrachlorid ($CHCl_2 \cdot CHCl_2$). This substance is well known to industrial chemists, and also goes under the trade name of Cellon. Because of its solvent action on cellulose acetate, acetylene tetrachlorid is a constituent of the product used to coat the wings of aeroplanes. A study of its toxicology shows that it has a decidedly harmful influence on the liver and the kidneys. By ordering the proper ventilation of the workrooms and insuring the efficient removal of the toxic vapors, the dangers from this source can be eliminated.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal.—Dr. Eugene D. Bondurant, formerly Dean of the University of Alabama, School of Medicine, Mobile, who was operated on last June for duodenal ulcer, has entirely recovered and has resumed practice in Mobile.——Dr. Abijah B. Bennett, Opelika, was struck by an automobile October 10, and sustained serious injuries.

GEORGIA

Drug Victims' Hospital to Close.—It is announced that the Atlanta City Hospital for Drug Victims will be closed November 1. During the existence of the institution, about 150 drug addicts have been treated and pronounced cured.

Personal.—Dr. James S. Greenleaf, Macon, fell from the second story window of his office, October 13, but was not seriously injured.——Dr. Mather M. McCord, Whigham, as the result of a competitive examination, has been appointed full time county health officer of Floyd County.

New Board Officers Elected.—At a meeting of the Georgia State Board of Medical Examiners held October 13, officers were elected as follows: Dr. Richard E. Hinman, Atlanta, president; Dr. Frederick D. Patterson, Cuthbert, vice president; Dr. Charles T. Nolan, Marietta, secretary treasurer.

IDAHO

Examination Required.—Word from the secretary of the Idaho State Board of Medical Examiners states that an examination is still required for the license to practice in that state. It appears that a report to the contrary has been published somewhere and several applicants have sent in their diplomas thinking that they could secure registration by so doing. An examination is essential.

New Officers for Idaho Society.—The twenty-third annual meeting of the Idaho State Medical Association was held at Lewiston, October 13 to 15, forming a part of the triennial joint meeting of the state medical associations of Idaho, Washington and Oregon, and the following officers were elected: president, Dr. Truman O. Boyd, Twin Falls; vice president, Dr. Oscar C. Carssow, Lewiston; secretary treasurer, Dr. Edward E. Maxey, Boise (reelected); and journal trustees, Drs. Robert L. Nourse, Boise, and John N. Alley, Lapwai. Twin Falls was selected as the next place of meeting.

ILLINOIS

Districting the State.—Secretary C. St. Clair Drake of the State Board of Health announces that Illinois will soon be divided into 2,600 districts with a registrar of vital statistics for each district, for the purpose of putting into operation the new state vital statistics law.

Personal.—Dr. Wilfred H. Gardner, Bloomington, is on duty in a British war hospital in London.——Dr. Louis J. Bechtold, Belleville, is ill with tetanus in St. Elizabeth's Hospital in that city.——Dr. John C. Helper, Benbow City, who has been suffering from anthrax, was reported out of danger. October 21.——Dr. Harmon E. Price, Clinton, is reported to have closed his office and discontinued the practice of medicine preparatory to leaving for California in November.——Dr. James A. Kleinsmid, Aledo, who was seriously injured in an automobile accident, October 5, is slowly improving.——Dr. Hugh A. Kelso, Paxton, was operated on in St. Luke's Hospital, September 29.

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[1] Hollings, Byam: Hospital Noises and How to Minimize Them, Mod. Hosp., 1915, v, 226.

[2] Poisoning by Tetrachlorethane, Miscellany, THE JOURNAL A. M. A., Feb. 27, 1915, p. 766.

State Tuberculosis Society Elects Officers.—At the seventh annual meeting of the Illinois State Society for the Study and Prevention of Tuberculosis held in Danville, October 22 and 23, the following officers were elected: president, Dr. George T. Palmer, Springfield; vice presidents, Drs. Charles W. Lillie, East St. Louis, and Frank D. Rich, Joliet; treasurer, Mr. David R. Forgen, Chicago; and executive committee, Drs. James W. Pettit, Ottawa; Ethan A. Gray, Chicago; Theodore B. Sachs, Chicago; Lewis C. Taylor, Springfield; William A. Evans, Chicago; Mr. George W. Perkins, Chicago, and Mr. Herbert W. Mathews, Pekin.

Chicago

Hospital to Close.—It is announced that the Maimonides (Kosher) Hospital will close November 1, on account of lack of financial support. The hospital is said to have debts amounting to about $100,000.

Personal.—Dr. French S. Cary has been appointed assistant professor of urology and urological surgery, College of Medicine, University of Illinois.—Dr. William S. White, who was operated on at the Evanston Hospital for appendicitis and the removal of gallstones, recently, is reported to be doing well.——Dr. Jabez D. Hammond, who has been ill at his home for several weeks, is reported to be improving.——Dr. Oscar Dodd has been elected president of the Illinois Charitable Eye and Ear Infirmary.——Drs. Duro Guca and Leo M. Czaja have returned after a year in Serbia.

Memorial for Mrs. Preble.—Friends of Dr. and Mrs. Robert B. Preble have undertaken to form a memorial fund for a philanthropic purpose yet to be determined, to express their sorrow over the death of Mrs. Preble, and their sympathy for Dr. Preble and his family. Mrs. Preble had been actively interested in the work of raising funds for the Chicago Collegiate Bureau of Occupations, a bureau which has for its object the securing of positions for women with college training and was also interested in the philanthropic work of the Chicago Women's Club. Any wishing to assist in this work are invited to send checks or inquiries to Mrs. Charles L. Meeks, 5321 Greenwood Terrace.

INDIANA

Dispensary Charges Small Fee.—The Indianapolis City Dispensary, presumably a free dispensary for the indigent, has now decided to charge a fee of 10 cents each for bottles or containers supplied with medicine in the drug department, to those who are able to pay. The fee is entirely voluntary and medicine will not be refused individuals who produce satisfactory evidence of their inability to pay this fee.

Personal.—Dr. Claude C. Crum, Jeffersonville, has been appointed surgeon to the Jeffersonville plant of the American Car and Foundry Company.——Dr. Stephen L. Egart, roentgenologist at the Indianapolis City Hospital, has resigned to take effect, December 15.——Dr. Albert J. Irwin, Goshen, who has been ill for two weeks, has recovered and resumed practice.

Centennial Committeemen Selected.—The following new centennial celebration committees have been announced by the Indiana Historical Commission: committee on medicine, Drs. General W. H. Kemper, Muncie, chairman; William R. Davidson, Evansville; John G. Jones, Vincennes; Joseph D. Heitger, Bedford; William H. Stemm, North Vernon; Joseph H. Weinstein, Terre Haute; Oliver J. Gronendyke, Newcastle; W. Burrette Kitchen, Indianapolis; Frederick A. Tucker, Noblesville; Otis B. Nesbit, Valparaiso; Godlove G. Eckhart, Marion; Elmer E. Morgan, Fort Wayne, and Angus C. McDonald, Warsaw. Committee on hygiene and public health: Drs. William F. King, chairman, Indianapolis; Charles S. Bosenbury, South Bend; Charles A. Zinn, Frankfort; Eric A. Crull, Fort Wayne; Herman G. Morgan, Indianapolis; W. D. Thurber, Indianapolis; Porter H. Linthicum, Evansville; Henry B. Shacklett, New Albany; Charles C. Wert, Covington; Harry J. Thompson, Laporte, and Prof. J. C. Sanders, Columbia City.

IOWA

Tuberculosis Foes Organize.—The Iowa Association for the Prevention of Tuberculosis was organized in Des Moines, October 4, and the following officers were elected: president, Dr. William W. Pearson, Des Moines; vice presidents, Gov. Charles W. Clark, Dr. Walter L. Bierring, Des Moines, and Mrs. Charles Saunders, Council Bluffs; secretary, Dr. John H. Peck, Des Moines; treasurer, C. H. Stevenson, Des Moines, and assistant secretary treasurer, Dr. Herbert V. Scarborough, Oakdale.

Hospital Notes.—Mine workers of Iowa have purchased the old building of the Drake University Medical School, Des Moines, and will use it for a hospital for sick and injured miners and also will use it as a headquarters for their first aid teams.——Marengo is attempting to raise $20,000 for the building of a municipal hospital.——The Cedar Valley and May hospitals, Charles City, have incorporated under the name of the Cedar Valley Hospital. The institution is to be opened with equal rights to all physicians and surgeons of Floyd County.

Distinguished Visitors to Fort Madison.—At the meeting of the Fort Madison Medical Society, October 8, the guests of honor were Dr. William J. Mayo, Rochester, Minn., who spoke on "Surgery of the Spleen"; Dr. Victor C. Vaughan, University of Michigan, Ann Arbor, who delivered an address on "Infection and Immunity"; Dr. Richard H. Harte, Philadelphia, who spoke of "Typhoid Perforation"; and Dr. Donald C. Balfour, Rochester, Minn., who read a paper on "Gastric Ulcers." A reception and banquet were held in the Masonic Hall during the afternoon.

Personal.—Dr. Ernest T. Kegel, Iowa City, county physician of Johnson County, fractured his left leg below the knee while cranking his automobile, recently.——Dr. George L. Day, Lone Tree, is reported to be critically ill at a hospital in Iowa City.——Dr. Henry Matthey, Davenport, has been appointed surgeon in chief of the Military Hospital at Brounsberg, East Prussia.——Dr. Ella Blackburn, physician in charge of the women patients at the Iowa Hospital for the Insane, Mount Pleasant, is said to have been dismissed by the State Board of Control, October 5, as the result of an investigation made by the board of charges filed against the institution by Dr. Amelia A. Dickinson, Iola, Kan., a former intern.——Dr. Wilton W. McCarthy, Des Moines, who was seriously injured in an automobile accident several weeks ago, has returned to his home convalescent from the Methodist Hospital.——Dr. Clara B. Whitmore, Sioux City, started for Shanghai, China, October 4. to take up her new work as surgeon and gynecologist to the Margaret Williams Hospital, Shanghai.——Dr. Walter A. Matthey, Davenport, is under treatment in the Mercy Hospital for streptococcus infection of the left hand contracted recently during an operation.——Dr. Charles H. Cogswell, Cedar Rapids, after a sojourn in Egypt, has decided to return to France and enter the hospital service of the French army.——Dr. Edward R. Ames, Morrice, was seriously injured recently in a collision between his automobile and another motor car.——Dr. Mark F. Boyd, Iowa City, has succeeded Dr. Charles S. Woods, Iowa City, resigned, as state epidemiologist and superintendent of the department of preventive medicine in the medical department of the University of Iowa.

MARYLAND

Civic Club Formed.—A meeting of physicians of Baltimore was held at the Medical Library, October 8, to organize a physicians' civic club, the idea of which is to familiarize physicians with the newer forms of city government.

Memorial Scholarship Fund.—The friends of the late Prof. David Streett, Baltimore, have suggested the establishment of a memorial scholarship in his name at the University of Maryland School of Medicine, for worthy but indigent medical students.

Health Officials Visit Sydenham.—Health Commissioner John D. Blake and Dr. William T. Howard, Jr., the new assistant commissioner, made their first visit of inspection to Sydenham Hospital, the municipal hospital for infectious diseases, to acquaint themselves with the workings of the institution.

Insane Negroes to be Transferred.—The authorities at the Crownsville State Hospital, Dr. Robert P. Winterode, superintendent, have notified the supervisors of city charities that they will transfer about 200 negroes from the insane department at Bay View Asylum to the Crownsville State Hospital, the transfer to take place on or about October 28-29. This means that practically all the negro insane will be removed from this institution and cared for at a state hospital.

Personal.—After a year spent in France caring for the wounded, Dr. Roades Fayerweather has returned to Baltimore. In response to a request of the French officials, Dr.

Fayerweather talked little of conditions in France, but told of the hospital at Pau, where he spent most of his time as the head of the American Red Cross unit.——Dr. John F. Spearman, who has been stationed at the Red Cross Hospital at Glewitz, Germany, has returned to Baltimore.——Dr. Richard P. Strong, director of the International Sanitary Commission in Serbia, reached New York, October 4, on the *Duca degli Abruzzi*. He reports that more than 100,000 deaths from typhus occurred during the present outbreak.——Dr. Frank J. Powers has succeeded Dr. George L. Wilkins, Baltimore, who had been for more than fifteen years physician to the city jail.——Dr. James A. Nydegger has been appointed a member of the Board of Visitors and Governors of St. John's College, Baltimore.

MASSACHUSETTS

Ether Day.—The sixty-ninth anniversary of Ether Day was observed October 16 at the Massachusetts General Hospital. Dr. William Williams Keene, Philadelphia, delivered an address on "The Dangers of Anesthesia" and during the day demonstrations were carried out at the hospital from 10 a. m. to 1 p. m.

Personal.—Dr. Benjamin H. Metcalf, Winthrop, has arrived home after an automobile trip from Winthrop to the Panama Pacific Exposition, San Francisco, in which his machine carried five passengers, baggage and equipment.——Dr. Edward H. Nichols, who recently returned from France, delivered an address before the metropolitan district branch of the Massachusetts Dentists' Society, October 11, on "War Surgery in France."——Dr. Timothy J. Sullivan, Somerville, has been appointed medical attendant for the employees in the postal service.

Changes in Harvard Faculty.—Dr. Martin J. English has resigned as fellow in pediatrics; Dr. Raymond B. Parker as alumni assistant in obstetrics; Dr. Cyrus H. Fiske as assistant in biological chemistry; Dr. Clarence C. Little as research fellow in gynetrics, and Dr. Thomas Ordway as instructor in medicine in Harvard Medical School.——The board of overseers of Harvard College has appointed Dr. Marshall Fabian assistant professor of pathology in the medical school; Dr. Edward A. Doisy assistant in biological chemistry, and Dr. Samuel E. Chiu, Austin, teaching fellow in biological chemistry.

Question of Cures Ruled Immaterial.—In the trial of Francis F. Davies and George J. La Plant, chiropractors, in the supreme court at Springfield, for practicing medicine without a license, attempts were made by the defense to introduce evidence to show that "cures" had been *effected.* These questions were ruled out as immaterial. Judge Irwin stated that the question of cures was not at issue and it made no difference if the men performed miracles. He declared the question at issue was whether or not the men had engaged in the illegal practice of medicine as charged. The defendants were fined $500 each. This trial is thought to establish definitely the legal status of chiropractic in Massachusetts. The supreme court in the Zimmerman case decided a few months ago that chiropractic was the practice of medicine and the present case has decided that it is not simply massage. Its followers, therefore, are subject to the requirements of the medical practice act.

MINNESOTA

Physicians' Building Planned.—Plans have been prepared on Second Avenue, Minneapolis, between Sixth and Seventh streets, for a twelve-story building to be used by physicians. The building will cost about $1,000,000.

Dermatologists Organize.—The Minnesota Dermatological Society was organized at a meeting held in Minneapolis, October 19, members being present from Minneapolis, St. Paul, Duluth and Rochester. Regular meetings will be held four times a year alternately in St. Paul and Minneapolis.

Personal.—Dr. Bert R. Karn, Ortonville, was operated on for appendicitis, October 11, at the Grand View Hospital, Ortonville.——Dr. Louis S. B. Robinson has resigned as assistant superintendent of the Minnesota State Sanatorium for Consumptives and will return to his practice in St. Paul in November.——Dr. Joseph Nicholson, Brainerd, was operated on for appendicitis, recently.——Dr. Owen J. Evans, Minneapolis, was operated on at Hill Crest Hospital, October 9, for osteomyelitis of the left femur.

MISSOURI

Petition for Quarantine of Syphilitic.—Probably a unique instance in the campaign against venereal diseases is the issuing of an injunction in Springfield to quarantine a woman afflicted with syphilis. The health commissioner submitted a petition to the court for such an injunction, and the court, of which the judge is the Hon. Arch A. Johnson, granted his petition and the woman was placed in a hospital and compelled to take treatment. The text of the petition follows:

IN THE CIRCUIT COURT OF GREENE COUNTY, MISSOURI.
DIVISION NO. 2, SEPTEMBER TERM, 1915.

Edwin F. James, City Health Commissioner, Plaintiff
vs.
Margaret Dale, Defendant

Plaintiff states that he is the Public Health Commissioner of the City of Springfield and as such is charged with the care and responsibility of the health of the citizens of said city.

Plaintiff states that the defendant is an unmarried female of the age of about twenty years and is a resident of said City of Springfield, Missouri.

Plaintiff states that the defendant Margaret Dale is now infected and has for sometime past been infected with a venereal disease, to-wit, with the disease commonly known as syphilis.

Plaintiff states that defendant is a woman of bad repute and plies her vocation of a common bawd and habitually offers herself and her body for sexual commerce in the said City of Springfield and at other points in Greene County, Missouri, and is now exposing herself in said county on the banks of James River for sexual commerce, and as plaintiff is informed and believes, is now engaging in such sexual commerce with divers persons to plaintiff unknown.

Plaintiff states that by reason of the premises the defendant is a menace to the health and morals of the community and her unrestrained freedom and acts of sexual commerce constitute her a public nuisance and a menace to the people of said county and City of Springfield.

That by virtue of the laws creating the office now held by plaintiff, he is in law charged with the maintenance of good health and is charged with the duty of keeping said City free and clear of contagious and infectious diseases and is charged with the duty of safe-guarding said City and its inhabitants from disease and death.

Plaintiff states that unless his prayer herein be granted he is remediless at law and no action in law will afford plaintiff an adequate or full and complete remedy at law.

Plaintiff states that for the safe-guarding of the health of the community defendant should be quarantined for said disease and should be restrained from plying her vocation and should be restrained and placed under such charge as will prevent the spread of such disease.

WHEREFORE, Plaintiff prays that a temporary writ of injunction issue commanding that she be limited to her movements to a certain specified quarter and that she be placed under the care of a competent physician until she be purified and cleansed of such disease.

EDWIN F. JAMES, Plaintiff.
By T. J. DELANEY & PERRY T. ALLEN, his attorneys.

NEW YORK

Insane Hospital Changes.—Dr. John C. Feltz, assistant to the medical director of the State Hospital for the Insane at Schenectady, N. Y., has resigned and will make his home at Gettysburg, Pa., and has been succeeded by Dr. Edgar B. Funkhouser.——Dr. Hibbert R. Roberts, Rochester, N. Y., has been appointed assistant physician to the Dannemora State Hospital for the Insane.

No Danger of Anthrax Epidemic.—The State Industrial Commission has contradicted the rumors that there is danger of an epidemic of anthrax in this state. According to the records of the agricultural department anthrax was reported in animals in fifteen counties in 1913, in sixteen counties in 1914, and in ten counties thus far in 1915. Aside from the cases reported in the three metropolitan districts, six cases with two deaths have been reported from other counties.

Lay Cornerstone at Letchworth Village.—The laying of the cornerstone of the new attendants' home at Letchworth village for the feebleminded, October 19, marks another step in the progress of this institution. On this occasion the president of the board of directors, Frank A. Vanderlip, announced that $750,000 had thus far been expended on permanent improvements for the village and that the total cost would be about $3,500,000. Governor Whitman laid the cornerstone and in his address announced his policy of dealing with the increasing number of insane persons in this state. He recommended the establishment of five new dispensaries as an aid to the home treatment of incipient insanity in connection with the hospitals for the insane at Buffalo, Binghamton, Middletown, Utica and Willard. In the hospitals already having dispensaries, he unfolded plans for an extension of that line of work. Through special efforts of the hospital commission last year the number of patients on parole was increased by 439. Each patient cared for at home represents a saving of $208 for the state.

New York City

Memorial to Dr. Flint.—At a meeting of the faculty of Cornell University Medical College October 15, a memorial to Dr. Austin Flint was read and adopted. This memorial sets forth the achievements of Dr. Flint as a scientist, teacher and orator.

Society for Care of the Aged.—The New York Geriatric Society was recently organized with the object of studying diseases of advancing years. Dr. Robert Abrahams was elected president; Dr. Edward P. Swift, vice president, and Dr. Ignatz L. Nascher, secretary.

Greater New York Medical Association.—At the meeting of the Medical Association of the Greater City of New York held in DuBois Hall of the New York Academy of Medicine, October 18, Dr. E. Bosworth McCready, Pittsburgh, read a paper entitled "Paedology and Its Possibilities; the Study, Treatment and Education of Children Who Require Special Attention," illustrated by lantern slides.

Personal.—Dr. Vernon O. Heddens sailed for France as assistant surgeon with a hospital unit, October 16.——Dr. Merrill N. Foot, Richmond Hill, returned October 5 on the *Rochambeau*, after several months on duty with Mrs. Harry Payne Whitney's Hospital at Juilly.——Dr. Mary M. Crawford, Brooklyn, has returned after nearly a year of service with the American Ambulance Hospital near Paris.

Cornell Medical College Opening.—Cornell University Medical College entered on its eighteenth year with an excellent enrollment. Dr. John A. Hartwell, president of the Cornell Medical Society, presided at the opening exercises, at which addresses were made by Mr. Arthur F. Cratzer, representative of the senior class, and Dean William M. Polk, who spoke on the "Advance in Modern Medicine."

No More Horse Ambulances.—All horse drawn ambulances used in the service of the city hospitals in Manhattan and the Bronx, including Bellevue, Gouverneur, Harlem and Fordham hospitals, have been withdrawn from service and replaced by motor ambulances. Some of the horses just retired have been in the service twenty years and will be transferred to the city's inebriate farm at Warwick, N. Y. Both efficiency and economy will result from this change.

Request for Census Granted.—It has just been announced that Mayor Mitchell has granted the request of Commissioner Sigismund S. Goldwater for a census of Manhattan to be taken by the police following the election. This step has resulted from the failure of the state census board to furnish the department with any satisfactory figures from the state census of last spring. The department's calculations, hitherto generally accurate, have shown 600,000 more persons in the city than the number indicated by the state census board. If a large discrepancy is found between the figures obtained and those of the state census board, a census of the other boroughs will also be taken.

Report on Laboratory of Health Department.—At the special request of Commissioner Sigismund S. Goldwater, the medical societies of the counties of New York and Kings appointed a committee last May for the purpose of investigating the diagnostic laboratories of the department of health. A report based on this investigation has just been submitted to the health department. It states that containers and supplies are sometimes lacking at the different stations; that specimens are not collected after 4 p. m. and that transportation facilities to and from the department are slow and often burdensome. The investigating committee mentions the need of additions to the present staff, and advises that incubators be operated in certain boroughs for diphtheria cultures and a collection made at a later hour than is now customary. It suggests further the operation of several automobiles for the purpose of collecting specimens and carrying supplies.

NORTH CAROLINA

Personal.—Dr. Robert Crawford, Rock Hill, has returned after a service of about one year in Germany with the Red Cross.——Dr. Benjamin F. Royal, Morehead City, has been appointed a member of the board of directors of the Eastern Hospital for the Insane, Goldsboro, succeeding Dr. W. E. Headen, Morehead City, resigned on account of ill health.

Hospital Notes.—The contract for the Edgecombe Central Hospital has been awarded by the county commissioners to a firm of contractors in Sanford for $10,693.——Drs. Byrd Charles Willis and Edmund Simpson Boyce announced that they have taken over the management of the Parkview Hospital, Rocky Mount. Drs. J. P. Whitehead, Ivan P. Battle, Richard H. Speight, Jr., Emil B. Quillian and Joe P. Speight will continue their connection with the hospital as before and Drs. George Ben Johnston and A. Murat Willis, Richmond, Va., will continue as consulting surgeons on the staff. ——The Baby Hospital in the Bear Annex to the James Walker Memorial Hospital, Wilmington, closed September 29 after a very successful season in which fourteen babies were under treatment, ten of whom were returned to their parents recovered, two died and two were still under treatment at the time of the closing of the institution. The management hopes to have a building of its own by May 1 of next year.

PENNSYLVANIA

Personal.—Dr. William S. Wheeling, Spangler, is ill in the Spangler Hospital with appendicitis.——Dr. David H. Bemis, West Middletown, is reported to be ill with bronchitis.——Dr. John G. Thomas, Newton Square, is reported to be critically ill as the result of a bite of a poisonous insect. ——Dr. Warren E. Forsythe has been placed in charge of the health service of the Pennsylvania State College.——Dr. Daniel P. Maddox, Chester, has been reappointed a member of the Medical Bureau of Medical Education and Licensure.

Philadelphia

Funds for Negro Hospital.—More than 200 workers started October 19, on a ten-day campaign to raise $150,000 for the Lincoln Memorial Hospital for negroes.

Lip-Reading Clinic Opened.—The first lip-reading clinic was held at the Polyclinic Hospital, October 12, under the instruction of Dr. G. Hudson Makuen. Clinics will be held at the hospital every Tuesday, Thursday and Saturday afternoon, from 2 to 3 o'clock.

Reception to Surgeon-Generals.—A reception was given October 15 by the Medical Club of Philadelphia at the Bellevue-Stratford, in honor of Rear Admiral William C. Braisted, Surgeon-General, U. S. Navy, and Surgeon-General Rupert Blue, U. S. P. H. S.

Personal.—Dr. William G. Spiller, assistant professor of neurology in the University of Pennsylvania, was elected professor of neurology, October 18, succeeding Dr. Charles K. Mills, resigned, and elected emeritus professor of neurology.——Dr. Eileen Giles has been appointed physician in charge of the Alto Pass (N. C.) Hospital.——Dr. Melvin M. Franklin has been elected orthopedic surgeon to the Philadelphia General Hospital, to succeed Dr. Gwilym G. Davis, resigned after fourteen years' service.——Dr. J. Torrance Rugh has been elected professor of orthopedic surgery in the Woman's Medical College.——Dr. John W. West was recently elected president of the Ohio Society.——Dr. Michael G. Wohl has resigned as pathologist to the Howard and Samaritan hospitals to take charge of the pathological laboratory of the Nicholas Senn Hospital, Omaha.——Dr. John M. Baldy has been reappointed a member of the State Bureau of Medical Education and Medical Licensure by Governor Brumbaugh.——Dr. Henry A. Strecker has been appointed chief medical inspector of the Bureau of Health, to succeed Dr. Charles A. Groff, resigned.——Dr. Florence C. Child has been appointed medical inspector of the organization of Child Hygiene.

TEXAS

Hospital Opened.—The joint City and County Hospital, Wichita Falls and Wichita County, was opened to patients, October 15.

Upholds Vaccination Law.—After two years of litigation the supreme court of Texas has upheld the right of school boards to compel the vaccination of children before they will be allowed to enter the public schools. This decision was rendered in the case of Dr. A. D. Zucht against the San Antonio School Board, mention of which was made in The Journal at the time the action was begun.

CANADA

Hospital News.—The offer made several months ago by Dalhousie University, Halifax, N. S., to supply a hospital for overseas service has been accepted by the Canadian Militia Department. The following have offered to man that hospital: Drs. John Stewart, J. G. MacDougall, George M.

Campbell, J. R. Corston, L. M. Murray, E. V. Hogan and A. G. Nicholls. It is possible that the hospital will go to Alexandria, Egypt.——No. 6 Stationary Hospital supplied by Laval University is now up to full strength. It may leave for the front any day. The commanding officer is Lieut.-Col. G. E. Beauchamp; Majors J. O. D. LaCroix, J. P. Décarie and Georges Bourgeois; Capt. J. A. Lussier; Lieuts. J. U. Gariepy; J. de G. Joubert, J. E. Lorrain, L. D. Collin, Henri M. DuHamel.

Ontario Medical Commission.—The University of Toronto and the Ontario Medical Association presented their views to the Ontario Medical Commission during the past week. For the university, President R. A. Falconer was the chief speaker. He stated that every man who wants to practice the art of healing should have the proper medical training. If he wants to improve on that and become an osteopath, or chiropractor, well and good. President Falconer believed the university had a duty to perform to the public in preparing doctors for the world and was emphatic in his views regarding the danger of allowing men unlearned in medicine to practice at will. He pointed out that any modern school for medical practitioners was kept up at great expense to the community, and it was worth it, because, once prepared, a doctor gave long service to the community.——Replying to a question of the commissioner, Dr. Clarke, superintendent of the Toronto General Hospital, stated he did not favor osteopaths and chiropractors being allowed the privilege of treating patients in the hospitals, under existing conditions. He pointed out that all the medical students of the University of Toronto finish their training in the hospitals and only those can be allowed in who have proper medical training.——Dr. Harry B. Anderson, president of the Ontario Medical Association; Dr. R. A. Reeve, Toronto; Dr. Charles Sheard, Toronto; Dr. Howitt and McKinnon of Guelph, and others spoke for the Ontario Medical Association.——The chiropractors were also given a hearing.——Next week the commissioner announced he would take evidence under oath. The Academy of Medicine, Toronto, will be represented by several speakers or witnesses, who will deal with military surgery and sanitary science, life insurance examinations, surgery, bacteriology, etc.

Personals.—Word comes from England that Lieut.-Col. Walter McKeown, M.D., Toronto, stationed at Folkstone, England, has been appointed president of the Medical Pension Board. It is likely this refers to Canadian soldiers, although it is understood that the University of Toronto Base [illegible] Dr. McKeown was attached had gone [illegible] and was stationed *in Sicily* and would most probably be used in connection with the campaign in Serbia.——Dr. John M. Robb, Blind River, Ontario, has been selected as the conservative candidate for the Ontario legislature for Algoma.——Dr. Hugh A. Farris, Lake Edward, Que., has been appointed medical superintendent of the St. John County (N. B.) Sanatorium.——Dr. Joseph A. Leduc, Montreal, has been appointed head physician of the Foundling Hospital of the Grey Nunnery, in succession to the late Dr. Isiäe Cormier.——Capt. George R. Philip and Reginald S. Pentecost, Toronto, have been gazetted to the rank of majors.——Lieut.-Cols. Geo. S. Rennie, Hamilton, and Lorne Drum, Ottawa, have been promoted to temporary colonels. Both are serving abroad.——Dr. William Mann, Winnipeg, is temporary medical officer of the twenty-third reserve battalion, at present in England.——Col. Robert J. Blanchard, Winnipeg, is the president of the permanent board at Moore Barracks Hospital.——Dr. A. C. Scott, Indian Head, Sask., has been appointed to the medical staff of the Canadian forces in England.——Drs. George A. Ings and Frank H. Newburn, Calgary, Alta., have been gazetted majors in the Royal Army Medical Corps.——Dr. James W. Richardson, formerly of Calgary, has been appointed surgeon-specialist in the Imperial Army.——Major Charles A. Peters, M.D., Montreal, has been gazetted lieutenant-colonel.——Lieut.-Col. Archibald E. Ross, Sutherland, Sask., has been appointed assistant director of medical services of the first Canadian division.

GENERAL

Southern Medical Association to Meet.—The annual meeting of the Southern Medical Association will be held in Dallas, Texas, November 8 to 10. The general convention meetings will be held in the City Hall auditorium.

Ohio Valley Physicians to Meet.—The seventeenth annual convention of the Ohio Valley Medical Association will be held in Evansville, Ind., November 3 and 4, under the presidency of Dr. E. Otis Smith, Cincinnati. The headquarters of the association will be at the hall of the Evansville Business Association.

Pediatrists Organize.—The Central States Pediatric Society was organized in Chicago, October 15, and the following officers were elected: president, Dr. Borden S. Veeder, St. Louis; vice president, Dr. Olin W. Rowe, Duluth, Minn.; and secretary-treasurer, Dr. Clifford G. Grulee, Chicago. The next meeting will be held in St. Louis.

Alumni Election.—On October 16 the Massachusetts General Hospital Alumni Association held its annual meeting and banquet in Boston and the following officers were elected: president, Dr. Elbridge G. Cutler, Boston; vice presidents, Drs. Walter Channing, Brookline; George K. Sabine, Brookline, and William S. Thayer, Baltimore; and secretary-treasurer, Dr. Byam Hollings, Boston.

Return from Typhus-Stricken Serbia.—Four American physicians who have played a prominent part in combating typhus fever in Serbia, arrived in Boston on the *Cretic* last week. They include Dr. Louise Taylor Jones, Boston; Dr. Thomas W. Jackson, Washington, D. C., who succeeded Dr. Richard P. Strong as head of the American Sanitary Commission in Serbia; Dr. Joseph R. Thompson, Cleveland, and Dr. George W. Mellon, Beaver, Pa.

First Aid Treatment for Workmen.—At the convention of the National Association of Industrial Accident Boards and Commissions, held in Seattle, September 30 to October 2, quicker and more adequate medical treatment for injured workmen was vigorously advocated. Dr. Raphael Lewy, New York City, declared that of the 6,000 cases of injury he had examined in the past year 18½ per cent. had developed infection as the result of the lack of timely and expert treatment.

Railway Surgeons Meet.—At the annual meeting of the American Association of Railway Surgeons held in Chicago, October 12 to 15, *the following officers* were elected: president, Dr. Frank T. Fort, Louisville, Ky.; vice presidents, Drs. John M. Dodd, Ashland, Wis.; Edward H. Griswold, Peru, Ind., and Charles P. Frantz, Burlington, Iowa; and treasurer, Dr. Henry B. Jennings, Council Bluffs, Iowa. Asst. Surg.-Gen. William Colby Rucker, U. S. P. H. S., read a paper before the association on "Intent and Purpose of the Interstate Quarantine Regulation."

Convention of Southwestern Physicians.—The Medical Association of the Southwest held its tenth annual meeting at Oklahoma City, October 11 to 13, under the presidency of Dr. Jefferson D. Griffith, Kansas City, Mo. Fort Smith, Ark., was selected as the meeting place for 1916, and the following officers were elected: president, Dr. Joseph D. Becton, Greenville, Texas; vice president, Dr. Edward H. Martin, Hot Springs, Ark., and secretary-treasurer, Dr. Fred H. Clark, El Reno, Okla. (reelected).

Mississippi Valley Medical Association Meeting.—The forty-first annual meeting of the Mississippi Valley Medical Association was held in Lexington, Ky., October 19 to 21, under the presidency of Dr. Hugh Cabot, Boston. Indianapolis was selected as the next place of meeting and the following officers were elected: president, Dr. Willard J. Stone, Toledo, Ohio; vice presidents, Drs. Channing W. Barrett, Chicago, and Carl Lewis Wheeler, Lexington, Ky.; secretary, Dr. Henry Enos Tuley, Louisville, Ky. (reelected); and treasurer, Dr. Samuel C. Stanton, Chicago (reelected).

Conservation of Life.—The keynote of the Safety First Federation of America in Detroit, October 19 and 20, was the conservation of life, limb, health and property. Among the means to this end recommended by the association, are, the enactment of laws prohibiting the sale of dangerous weapons and explosives; the supply of free antitetanus serum by state and municipal authorities to be so placed that it can be conveniently and quickly obtained; the prohibition of the sale of firearms; the prohibition of common drinking cups and roller towels, and of spitting in public places and on sidewalks; the establishment of public baths in cities and the medical and dental inspection of school-children.

Bequests and Donations.—The following bequests and donations have recently been announced:

Children's Seaside Home of Atlantic City, N. J., $1,000; St. Timothy's Hospital, Philadelphia, $15,000, to endow three free beds in memory of Samuel L. Robeson, Sr., and Hannah W. Robeson, Samuel L. Robeson, Jr., and Louise Robeson, and Thomas A. Bradley and Mary A. Bradley, respectively, and $5,000 to the Home for Incurables, Philadelphia, for the endowment of a free bed in memory of Samuel L. Robeson, Jr., and Louise E. Robeson, by the will of Sarah J. Robeson.

Kansas University School of Medicine, $30,000, by the will of Dr. Joseph L. Porter, Paola, Kan.

Boston Floating Hospital, $25,000, to be known as the Nellie Ingalls Hodges fund, by the will of Walter William Hodges, Brookline, Mass.

Pennsylvania Hospital, Philadelphia, about $50,000, for the endowment of three beds in memory of her son Robert Hane Pile, by the will of Elizabeth Pile.

Polyclinic Hospital, Philadelphia, for a free bed as a memorial to Charles Baeder; St. Luke's Hospital and Northern Home for Friendless Children, Philadelphia, each $5,000, by the will of Julia Baeder.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga prize for 1915 has been awarded Dr. Joshua E. Sweet, Philadelphia, for his essay entitled "The Surgery of the Pancreas," and that the next award of the prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $250, will be made July 14, 1916, provided that an essay, deemed by the committee of awards to be worthy of the prize, shall have been offered. Essays may be on any subject, but must not have been published. They must be typewritten and if in any language other than English, it must be accompanied by an English translation, and must be received by Dr. Francis R. Packard, secretary of the college, 19 South Twenty-Second Street, Philadelphia, on or before May 1, 1916. Each essay must be unsigned, but must be plainly marked with a motto, and be accompanied by a sealed envelope bearing outside the motto of the paper, and within, the name and address of the author. The successful essay, or a copy of it, is to remain in the possession of the college and other essays are to be returned on application within three months after the award of the prize.

LONDON LETTER

London, Oct. 8, 1915.

The War

THE OPENING OF THE MEDICAL SCHOOLS

The medical schools are opened this session under very unusual circumstances. The war has not only depleted the staffs and the students already in the schools, but has also limited the number of entries. The only London school which is able to record an increase in the number of students entering this year is the London School of Medicine for Women, where the increase is a record one, in consequence of the great demand for women physicians brought about by the shortage of men resulting from the demand of the army. In many of the schools the usual opening address was dispensed with. At Charing Cross Hospital, Dr. R. M. Burrows, principal of Kings College, said that the colleges and hospitals of London had done yeoman service in putting their students and their apparatus entirely at the service of the government and the nation during the war. At King's College a class for the training of munition workers was started, and it had proved the model for other classes instituted in the London County Council Polytechnics. Universities, colleges and hospitals in London and throughout the kingdom had placed the brains of their scientists at the service of the special problems of the moment. It was for the universities to show that they could make their education flexible. While they should welcome every opportunity to do definite war work, they had also to lay stress on the general principle that no nation went under except through a lack of brain power, and that financial and military successes were, after all, as much dependent on education as literature or science.

At the Leeds medical school the opening address, on "Science and War," was delivered by Sir William Osler, who treated the subject in his usual historical and literary manner. The following is a picture given by him of a huge British hospital camp "somewhere in France" containing thousands of beds: "The inner lining of the tents was of a colored Cawnpore material with attractive patterns. More beautiful wards cannot be imagined, so rich and varied in coloring. And to the call of country and humanity are men and women from all parts of the English-speaking world, seasoned old veterans of the Army Medical Corps, consultants from London and Edinburgh, specialists of distinction, general practitioners, men from Australia and Canada looking after their special hospitals, with units of our brothers from Harvard University and from Chicago. Some of these groups; as that from McGill University, Montreal, have brought over a complete staff, with nurses and orderlies and all the necessary apparatus for a 1,040-bed hospital. Other Canadian university units have come from Toronto, Kingston, Laval and Dalhousie. At home the members of these staffs are busy teachers and practitioners. The nurses have come from all parts of the empire, and two groups from the United States." Dealing with the subject of the war and international science, he said that to one who is by temperament and education a follower of Sir Thomas Browne and free from the "common antipathies" and "national repugnances," one sad sequel of the war will be, for this generation at least, the death of international science. "An impassable intellectual gulf yawns between the Allies and Germany, whose ways are not our ways and whose thoughts are not our thoughts."

At the London School of Medicine for Women, Dr. Florence E. Willey said that the lack of labor which is being increasingly felt on all hands has opened the doors of various industrial pursuits to women who had long desired such an outlet for their energies, and has come as a call to service to others who had never before awakened to any need to use their talents for the common weal. The summons to women to fill up the ranks has come from all kinds of professions and trades, but in none perhaps is the demand more urgent than in the medical profession, and that for many reasons, immediate and future. The ever-increasing number of medical men and women employed in military service abroad, together with the number employed in either whole or part time military service at home, has taxed the resources of the medical profession to the utmost, for in these ways the war has directly absorbed the services of many thousands of physicians. But in more indirect ways the war is creating a future need which threatens to be very serious indeed. Young men who would now be entering on a training for some professional career are enlisting for naval or military service, and thus the supply of medical students in the men's schools is seriously diminished, and this means for years to come decreasing numbers of men in the profession of medicine. If men are to answer the call of their country at this crisis they cannot make good this deficiency; hence women must; and that they are willing to do so is made clear by the doubling of the usual entry to the London School of Medicine.

BERLIN LETTER

Berlin, Sept. 28, 1915.

Personal

September 23, Professor Waldeyer celebrated his fiftieth professorial jubilee. At the time of his appointment he was a professor of pathologic anatomy in Breslau, and not until 1872, when he was called to Strassburg, was he appointed professor of normal anatomy. October 6 he will celebrate his seventy-ninth birthday.

Prof. Ernst Neumann, formerly director of the pathologic institute in Königsberg, and a well-known authority on diseases of the blood, celebrated the sixtieth anniversary of his doctorate, September 24. On the same day Professor Knauff of Heidelberg, formerly ordinary professor of hygiene and medical jurisprudence, celebrated his eightieth birthday.

Professor Neufeld, division chief at the Institute for Infectious Diseases at Berlin, has been appointed Geheimer Medizinalrat. Since Löffler's death he has been acting director of the institute, a position he will probably fill until after the war, as there is no probability of securing a successor to Löffler's position at this time. All the hygienists and sanitarians are in the field and cannot be persuaded to return to civil work at this time. Furthermore, there is not much choice, because of the scarcity of men from whom a selection may be made. Naturally, one would have to consider Professor Kolle, ordinary professor in Bern, and Professor Uhlenhuth, ordinary professor in Strassburg. Professor Pfeiffer of Breslau and Professor von Wassermann, the two most prominent bacteriologists to be considered for this position, are disinclined to accept the appointment. Wassermann must also be considered a probable successor to Ehrlich, although I do not believe that he will leave his position at the Institute for Experimental Therapy in Berlin.

Professor Schmidt-Rimpler, formerly ordinary professor of ophthalmology died at Halle, September 23, aged 77. While a student, he was a favorite of Albrecht von Graefe, and in 1863, when he completed his examination, he was made assistant at von Graefe's private clinic. In 1864 he took part in the war against Denmark; later he entered general practice and was appointed on the staff of the medical division of the Charité, and in 1866 he again took the field against Austria. When Graefe established his own service in the Charité in 1868, Schmidt-Rimpler was appointed his assistant. Von Graefe died in 1870, and Schmidt-Rimpler conducted the clinic until a successor was appointed, as he himself had received a call to Marburg. He remained at Marburg until 1891, then went to Göttingen, and in 1901 was called to Halle. He remained in active service until last year, and took an active part always in the development of ophthalmology, contributing many hundreds of articles on the subject. These appeared in current literature and also as a part of collaborated works. His best-known publication was a textbook on diseases of the eye and ophthalmoscopy, which was published in English, Italian, Russian and Japanese. He was also very much interested in the question of shortsightedness among schoolchildren.

The Commandments Governing the Relations of the Public with the Doctor

The medical society of Frankfort has elaborated ten commandments or rules to govern the relations of the public to the doctor. These rules have been printed and the doctors are asked to distribute them among their patients and to post them in their waiting rooms. The rules are as follows:

1. Do not call the doctor unnecessarily for trivial illness, and do not wait too long in the case of serious illness or until the illness has reached such a stage of severity that it is imperative to call the doctor. Much valuable time may be lost by delay in securing medical assistance.

2. If your condition permits, consult the doctor during his office hours and do not ask him to come to you. Some examinations can be made only in the doctor's office, where certain instruments which cannot easily be transported are kept.

3. If you have decided that you will call the doctor, inform him to that effect before he leaves his home to make his calls; that is, before 9 o'clock in the morning. The doctor must lay his plans for the day's work ahead of time, and if you wish to assure yourself of an early visit, send in an early call.

4. Do not ask the doctor to call at a certain hour, but leave the time for making a visit to him, if your case is not urgent or not an emergency case which demands an immediate response to your call. The doctor is never master of his time, and it is very difficult for him to make a visit at a certain time. The business man should not expect his doctor to time his call at the noon hour when the former can leave his business and be at home. If he cannot consult the doctor during office hours, he should go home and remain there until the doctor can come to see him.

5. Do not ask the doctor to come immediately when it is not necessary. Such a visit, being an emergency visit, is combined with great inconvenience and loss of much time, as it interferes with other work. At the same time, other patients who should be visited first are slighted thereby.

6. Never call the doctor at night except in an emergency case. The doctor is human, and like every other man must have his rest. A tired, worried and overworked doctor, one who is frequently disturbed in his sleep, naturally cannot render such efficient service to his patient as he could if his rest were not broken so much.

7. On Sunday the doctor should be allowed to rest. No demand should be made on his time, except when his services are absolutely needed.

8. If a doctor is needed to answer an emergency call, please do not notify more than one man at the same time. If, in the confusion of the moment, more than one doctor has been called, countermand multiple calls as soon as possible.

9. When the doctor is expected, please have everything ready for him so that time will not be lost. Above all things, do not expect the doctor to wait to see you, but have your room and yourself in readiness to receive him. Have water, soap and towel in readiness for him, likewise pen and ink and anything else that might be needed by him, to avoid delay.

10. Do not detain the doctor unnecessarily during his office hours. Other patients are waiting to see him, each in his turn, and lost time may be a valuable item for them. Furthermore, other patients are awaiting the doctor at their homes. Female patients should be prepared to submit to any examination with as little loss of time as possible, and be so dressed that they can leave the office quickly and without the assistance of a maid.

PARIS LETTER

PARIS, Oct. 7, 1915.

The War

THE OPERATION OF THE MEDICAL SERVICE DURING THE RECENT BATTLES

M. Justin Godart, assistant secretary of the medical service in the war department, has gone to inspect the working of the measures adopted to assure the rapid transportation and the suitable distribution of the wounded after the recent battles of Champagne and Artois. In an interview he said that on the battlefield automobiles have been multiplied and have come up to the first aid posts whenever this was possible. The sojourn of the wounded on the field has been reduced to the minimum. By agreement with the railway companies, the average speed of the medical service trains has been from 30 to 45 kilometers (from about 18½ to about 28½ miles). Moreover, these trains have not remained more than an hour at the stations. The wounded have arrived in Brittany twenty-four hours after the receipt of their wounds; in Paris fourteen hours after; in Fontainebleau sixteen hours.

M. Godart declared that many operations had been performed in surgical automobile ambulances under excellent conditions. As things are, however, it seems that these ambulances play an ill-defined rôle. When kept moving too exclusively, they do not render sufficient service; when left in one spot they merely duplicate the service of the fixed ambulance units. Something else is required: operation and sterilization rooms, without surgical staff, coming to the aid of incumbered units.

The assistant secretary finds the general hygienic conditions excellent. Tetanus has almost disappeared. Gaseous gangrene has greatly diminished. The hygienic condition of the troops is equally good. Strict orders have been given for the removal of filth and refuse and its incineration, for the disinfection of buildings and for the suppression of flies. Soldiers in camp do not sleep directly on the ground, but always on raised beds of brush. The medical officers of the regiments are directed to obtain the cooperation of the municipalities for strict sanitation within municipal limits at all costs. Laundry wagons with driers permit the perfect cleansing of the soldiers' linen. Thanks to these measures, diseases which were so destructive in previous wars at present play an insignificant rôle.

SCHOOL BUILDINGS UTILIZED AS HOSPITALS

An arrangement has been concluded between the minister of public instruction and the assistant secretary of the medical service by which a certain number of school buildings, utilized up to the present as hospitals, have been or soon will be restored to their use as schools. All these changes are being made with the sole design of reconciling the demands of the national defense and the welfare of the wounded with the interests of education. In no region has the number of beds for the use of the wounded been diminished, the restoration of the school buildings having been made possible by the substitution of other buildings, the creation of new hospitals or the expansion of existing hospitals. The minister of public instruction has given specially definite orders for the disinfection of the buildings thus returned to normal use, so that the pupils may find them in perfect hygienic condition.

THE REPORT OF THE AMERICAN RELIEF CLEARING HOUSE

The semi-annual report of the American Relief Clearing House, of which I have mentioned the activities in previous letters (THE JOURNAL, Aug. 28, 1915, p. 213 and Sept. 18, 1915, p. 1042), has just been published.

The total number of boxes received by the central committee of the American relief, coming from all parts of the United States, exceeds 15,000. Of these, 1,500 are from the American Red Cross, of which the central American committee is the official representative in France. Among the other American organizations which have contributed are the Lafayette Committee of New York, which gave 750 boxes and bales, containing 25,000 outfits, or a total of 505,000 useful articles for the soldiers at the front; the American Girls' Aid Society, which gave 2,000 boxes, containing more than 100,000 pieces of clothing for the refugees; the American Commission of Aid for Belgium (the Hoover Commission) which gave 1,000 boxes of clothing; the War Relief Committee, which contributed 6,000 boxes and bales; the Vacation War Relief, which gave about 900 boxes; and so on without mentioning a large number of private donors. All these supplies have been transported from New York to France without expense, thanks to the courtesy and generosity of the Compagnie générale transatlantique. The gifts, composed of the greatest variety of objects, represent an estimated value of 10,000,000 francs ($2,000,000). The supplies have been distributed directly by the central committee, with the aid of the French government, to more than 600 hospitals and medical institutions; to about 500 workshops and aid organizations of all kinds situated in all parts of France; also to the soldiers at the front. During one of the particularly active months of summer, there were sent to about fifty prefects about 62,000 pieces of clothing for the civilian population of their respective departments.

The American Central Committee, admirably seconded and counseled by its adjunct French, Belgian, Russian, Italian and Serbo-Montenegrin committees, whose members are the official representatives of their respective governments, foresees numerous and urgent needs springing from the coming winter campaign, and, with its correspondent organization at New York (The War Relief Clearing House for France and Her Allies), is preparing to send numerous new gifts and subscriptions from all parts of the United States.

INCREASE IN THE PRICE OF MILK

The report has lately been published in several journals that the milk supply of Paris is about to be cut off. This is not quite correct. Paris is still being supplied, but on certain days the milk arrives late, for the milk trains have had to yield the right of way to military trains. But, although milk is not going to be lacking in Paris, the price is without doubt going to rise. To supply a city the size of Paris, whose daily consumption amounts to about a million liters (over 250,000 gallons) of milk, a very complicated organization is required. Moreover, the scarcity of labor in the country, the increase in the price of fodder, the sale of a large number of cattle for slaughter, the high price at which they sell and the fact that the dairy regions of the north are invaded—all this has tended to reduce the production and to increase the price of milk.

PERMANENT MISSION OF PROPHYLAXIS

By a decree of the minister of war, a permanent mission of prophylaxis in the zone of the interior has been created under the presidency of the assistant secretary of the medical service for the duration of the war. It comprises: Dr. Baillard, the medical inspector general; Dr. E. Roux, director of the Pasteur institute; Dr. Laveran of the Pasteur institute; M. Brissac, director of Public Charities and Hygiene in the interior department; Dr. Simonin, professor in the Ecole d'application de médecine et de pharmacie militaires du Val-de-Grâce; Dr. Pottevin, member of the Conseil supérieur d'hygiène publique de France.

DISTURBANCES OF THE ARTERIAL CIRCULATION IN RELATION TO WAR

At a recent session of the Académie des sciences, Dr. Moutier read an interesting paper on this subject. All persons whom Moutier has been able to observe after return from the battlefield since the beginning of the campaign present a radial hypotension. In all, the radial tension falls rapidly from the normal 15, to a very inferior figure, which generally varies between 7 and 10. In subjects who before their departure present generalized hypertension, the return of the radial tension to normal is observed, or even, more frequently, a lowering to below normal. This radial hypotension is the consequence of a peripheral vasodilatation, dependent on and compensatory to an internal vasoconstriction. By applications of d'Arsonval high frequency currents locally applied at the abdomen, the arterial circulation is regularized and the radial tension becomes normal again.

Disturbances of arterial circulation are frequently observed at the region of a limb which has sustained a traumatism of war, when they are not observed in the limb on the opposite side. This is manifest when the lesion is in an arm. In the latter case in the injured limb one finds a tension different from that in the uninjured limb; sometimes the tension is higher, but more frequently it is lower; the radial pulse in certain cases may even be imperceptible. A return to normal is observed not only as a result of a local abdominal application, but also after a local high-frequency application at the level of the junction of the limb.

Moutier believes that these disturbances of arterial circulation may have considerable influence on the course and perhaps even on the production of many diseases and complications observed in victims of war (frozen feet, certain atrophies, and retardation of cicatrization or of osseous consolidation).

Marriages

Charles Alexander Balkwill, M.D., Grafton, Wis., to Miss Emma Marie Pinkham of Hillsdale, Mich., October 12.

Lucius Boardman Morse, M.D., to Mrs. Margaret Shepperd Kemper, both of Hendersonville, N. C., October 7.

Eben Wesley White, M.D., Castle Rock, Wash., to Miss Elinor Mae Hibbard of Walla Walla, Wash., October 5.

Alan Richard Welch, M.D., Smithfield, Ill., to Miss Mabel Lee Hinckle of Hinckle, Va., at Cuba, Ill., October 11.

John George Breslin, M.D., Charlestown, Boston, to Miss May Evelyn Taber of Dorchester, Boston, October 6.

Wallace William Smith, M.D., Springfield, Mo., to Carlie Bell Souter, M.D., of Chicago, October 14.

William Gilliam Kennon, M.D., to Miss Elizabeth Thompson, both of Nashville, Tenn., October 12.

Wilbur Paul Rickert, M.D., East Millville, N. J., to Miss Bertha Watkins of Vineland, N. J., recently.

Simon Eugene Driskell, M.D., Alachua, Fla., to Miss Ethel Jones of Jones' Mill, Ala., June 17.

John Hamilton Taylor, M.D., to Miss Jessie Schucraft, both of Chattanooga, Tenn., October 12.

Albert Abrams, M.D., to Mrs. Blanche Schwabacher, both of San Francisco, September 28.

Frederick Johnson Corey, M.D., to Miss Ethel Henninger, both of Havana, Ill., October 6.

Theodore B. Templin, M.D., Gary, Ind., to Miss Gladys Ohbano of Chicago, October 2.

Percy Raymond Pierson, M.D., Readstown, Wis., to Miss Madge E. Starr, September 27.

Curtis Clyde Eves, M.D., to Miss Glodean Smith, both of Philadelphia, October 16.

Horace Gray, M.D., Boston, to Miss Katherine Meeker of Chicago, October 16.

Deaths

John C. Price, M.D. University of Pennsylvania, Philadelphia, 1893; aged 44; a Fellow of the American Medical Association; formerly roentgenologist to the State Hospital, Northern Anthracite Coal Region and Moses Taylor Hospital, Scranton, Pa.; chief medical inspector of the Division of Hygiene and Engineering of the Department of Labor and Industry of the State of Pennsylvania, Harrisburg; a specialist on vocational diseases; died at his home in Camp Hill, Harrisburg, October 13, from nephritis.

James Benjamin Shepherd, M.D. Jefferson Medical College, 1855; aged 81; surgeon of the Fifth Virginia Cavalry, C. S. A., during the Civil War; since 1870, a resident of Texas; physician and surgeon to the Texas Military Institute, Austin; and later assistant superintendent to the State Insane Hospital in that city; for thirty-four years a resident of San Antonio; died at his home in Alamo Heights, San Antonio, October 11.

Wallace Ernest Parkman, M.D. University of California, San Francisco, 1896; aged 41; of San Jose, Calif.; a member of the Association of Military Surgeons of the United States; for ten years acting assistant surgeon, U. S. Army, with service in the Philippine Islands, during which he was a member of the squad which captured Luis Aguinaldo; died at the Garden City Sanitarium, San Jose, October 5, from chronic nephritis.

William Noyes, M.D. Harvard University Medical School, 1885; aged 58; a member of the Massachusetts Medical Society, American Neurological Association and American Medico-Psychological Association; formerly superintendent of the Boston Insane Hospital and clinical instructor in mental diseases in Harvard Medical School; died at his home in Jamaica Plains, Boston, October 20.

Elmer Ellsworth Ferguson, M.D. Rush Medical College, 1897; from 1900 to 1912 proprietor and chief surgeon of The Dalles Hospital, but for two years a resident of Hood River, Ore.; died at his summer home, October 11, from a gunshot wound of the heart, self-inflicted, it is believed, with suicidal intent while suffering from melancholia.

Samuel Gordon Todd, M.D. Trinity Medical College, Toronto; Queen's University, Kingston, Ont., 1890; aged 46; a Fellow of the American Medical Association and American Academy of Ophthalmology and Oto-Laryngology; of Oshkosh, Wis.; a well-known specialist on diseases of the eye, ear, nose and throat; died at his home in Oshkosh, October 13, from pneumonia.

Andrew J. Smith, M.D. Central College of Physicians and Surgeons, Indianapolis, 1886; aged 83; who served in the United States Navy during the historic trip of Commodore Perry to Japan and was later an assistant surgeon in the Army with Civil War service; a practitioner for more than half a century; died at his home in Indianapolis, October 15, from cerebral hemorrhage.

George W. Daniels, M.D. Kentucky School of Medicine, Louisville, 1877; aged 67; a member of the Indiana State Medical Association; a veteran of the Civil War, and president of the Regimental Association of the One Hundred and Twenty-Third Indiana Volunteer Infantry; until two years ago a resident of Sweetsers, Ind.; died at his home in Marion, Ind., October 8.

Ethbert B. Emory, M.D. Homeopathic Hospital College, Cleveland, 1881; aged 66; a Fellow of the American Medical Association and an esteemed practitioner of Winfield, Kan.; died in his sanatorium in that city, October 13, from the effects of an incised wound of the throat, self-inflicted, it is believed, with suicidal intent, while despondent and of unsound mind.

Lewis Attwood, M.D. Kansas Medical College, Topeka, 1904; aged 36; of Topeka, Kan.; a specialist on diseases of the eye, ear, nose and throat; formerly a practitioner and druggist of Meriden, Kan.; was instantly killed October 16, when a Union Pacific motor car on the Blue Valley branch plunged through a bridge into a flooded creek near Randolph.

Adolph Kessler, M.D. University of Berlin, Germany, 1855; aged 82; a member of the Medical Society of the State of New York; formerly a member of the board of coroners of New York County and assistant sanitary superintendent of the Board of Health of the Bronx; died at his home in New York City, October 19, from senile debility.

Homer G. Newton, M.D. New York University, New York City, 1863; aged 79; one of the founders of the Brooklyn Eye and Ear Hospital, and an early ophthalmologist and otologist of Brooklyn; surgeon of U. S. Volunteers during the Civil War; died at his home in Shelburne, N. Y., October 11.

John Leon Parker, M.D. University of Michigan, Ann Arbor, 1899; aged 44; consulting surgeon to the Charles City (Iowa) Hospital; local surgeon of the Illinois Central Railroad and a member of the board of Education of Charles City; died suddenly in his office in Charles City, October 14.

John Marshall Kellogg, M.D. College of Physicians and Surgeons in the City of New York, 1868; aged 75; for many years a practitioner of Orange, N. J., but later connected with a preparatory school in New York; died at his home in East Orange, N. J., October 18, from cerebral hemorrhage.

Warren David Kleppinger, M.D. Medico-Chirurgical College of Philadelphia, 1913; aged 26; a Fellow of the American Medical Association; chief of the house staff and pathologist of the Allentown (Pa.) Hospital; died in that institution, October 9, from carcinoma of the pancreas.

Calvin Brice McKeown, M.D. Medical College of the State of South Carolina, Charleston, 1878; aged 63; a member of the South Carolina Medical Association; until three years ago a practitioner of Fort Lawn, S. C.; died at his home in Chester, S. C., October 11.

John D. Jordan, M.D. University of Louisville, Ky., 1872; aged 69; a member of the Arkansas Medical Society; formerly president of the board of education and a well-known physician and druggist of Eureka Springs, Ark.; died at his home in Antlers, Okla., October 7.

Herbert Augustine Morse, M.D. University of Michigan, Ann Arbor, 1866; aged 70; formerly a Fellow of the American Medical Association; for many years a practitioner and druggist of Batavia, N. Y.; died at his home in that city, October 15, from angina pectoris.

James P. Frame (license, Missouri, 1883), aged 78; formerly president of the Lewis County (Mo.) Medical Society and president of the Bank of Ewing, Mo.; a veteran of the Civil War; died at his home in Ewing, October 2, from diabetic gangrene.

Stanislas Alcide St. Amour, M.D. Ecole de Médecine et de Chirurgie, Montreal, 1886; aged 52; of Cheboygan, Mich.; a member of the Michigan State Medical Society; died in St. Luke's Hospital, Chicago, October 19, from cerebral hemorrhage.

Edmond G. Scruggs, M.D. Medical College of Georgia, Augusta, 1858; aged 84; formerly a member of the Medical Association of Georgia; a practitioner and druggist of Warrenton, Ga.; died at his home in that place, August 15, from nephritis.

Benjamin F. Hall, M.D. Louisville (Ky.) Medical College, 1877; aged 62; of Rock Island, Ill., and Davenport, Iowa; a specialist on diseases of the eye, ear, nose and throat; died in the Augustana Hospital, Chicago, October 17.

George Haner, M.D. New York University, New York City, 1877; aged 67; formerly a member of the Medical Society of the State of New York; died at his home in Farmersville, N. Y., July 2, from cerebral hemorrhage.

William Miller Baird, M.D. Bellevue Hospital Medical College, 1877; aged 66; of Atlanta, Ga.; formerly a member and speaker of the house of representatives of New Jersey; died at the home of his son in Baltimore, October 10.

Nathaniel Cope Miller, M.D. University of Pennsylvania, Philadelphia, 1870; aged 67; a Fellow of the American Medical Association; died suddenly at his home in Stroudsburg, Pa., about October 10, from disease of the kidney.

George W. James, M.D. University of Nashville, Tenn., 1867; aged 74; a Confederate veteran, for many years a practitioner of Humboldt, Tenn.; died while making a professional call in that place, October 14.

William John McNaul, M.D. Jefferson Medical College, 1894; formerly a Fellow of the American Medical Association; for twenty years a practitioner of Kensington, Philadelphia; died at his home, October 15.

George W. Crosby, M.D. Missouri Medical College, St. Louis, 1870; aged 69; formerly a member of the Arkansas Legislature and a practitioner of Heber Springs; died at his home in that place, about October 14.

Samuel W. Craig, M.D. Cincinnati College of Medicine and Surgery, 1869; aged 74; a veteran of the Civil War; for thirty years a druggist of Cincinnati; died at his home in Mt. Auburn, Cincinnati, October 4.

John W. Williams, M.D. University of Louisville, Ky., 1887; aged 62; a member of the Kentucky State Medical Association; died at his home in Clay City, Ky., October 13, from carcinoma of the stomach.

Thomas Jefferson Box, M.D. Tulane University, New Orleans, 1891; aged 59; formerly a Fellow of the American Medical Association; died at his home in Torras, La., July 4, from heart disease.

David Henry Van Nuys, M.D. Jefferson Medical College, 1864; aged 81; for fifty-one years a practitioner of Falmouth, Ind.; died at his home in Anderson, Ind., October 15, from bronchial pneumonia.

Gentry Guy Fisher, M.D. University of Nashville, Tenn., 1909; aged 27; formerly of Dibrell, Tenn.; of Bokchito, Okla.; died at his home in that place, October 10, from typhoid fever.

Lawrence Orr McCalla, M.D. College of Physicians and Surgeons, Baltimore, 1893; aged 52; a retired practitioner of Starr, S. C.; was shot and killed by his wife's nephew, October 9.

Simeon King Fisher, M.D. University of Louisville, Ky., 1884; aged 61; a member of the Kentucky State Medical Association; died at his home in Milton, Ky., June 25, from diabetes.

Edouard Tourigny, M.D. Laval University, Quebec, 1904; aged 42; of Aurora, Kan.; died at St. Albert, Warwick Parish, Quebec, Canada, July 13, from pulmonary tuberculosis.

John David Shepherd, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1887; aged 67; died at his home in Meadville, Mo., August 11, from general nervous breakdown.

Willard Knowlton Dyer (license, Massachusetts, years of practice, 1894), aged 64; a practitioner of Boston for thirty-two years; died in a hospital in Boston, October 18.

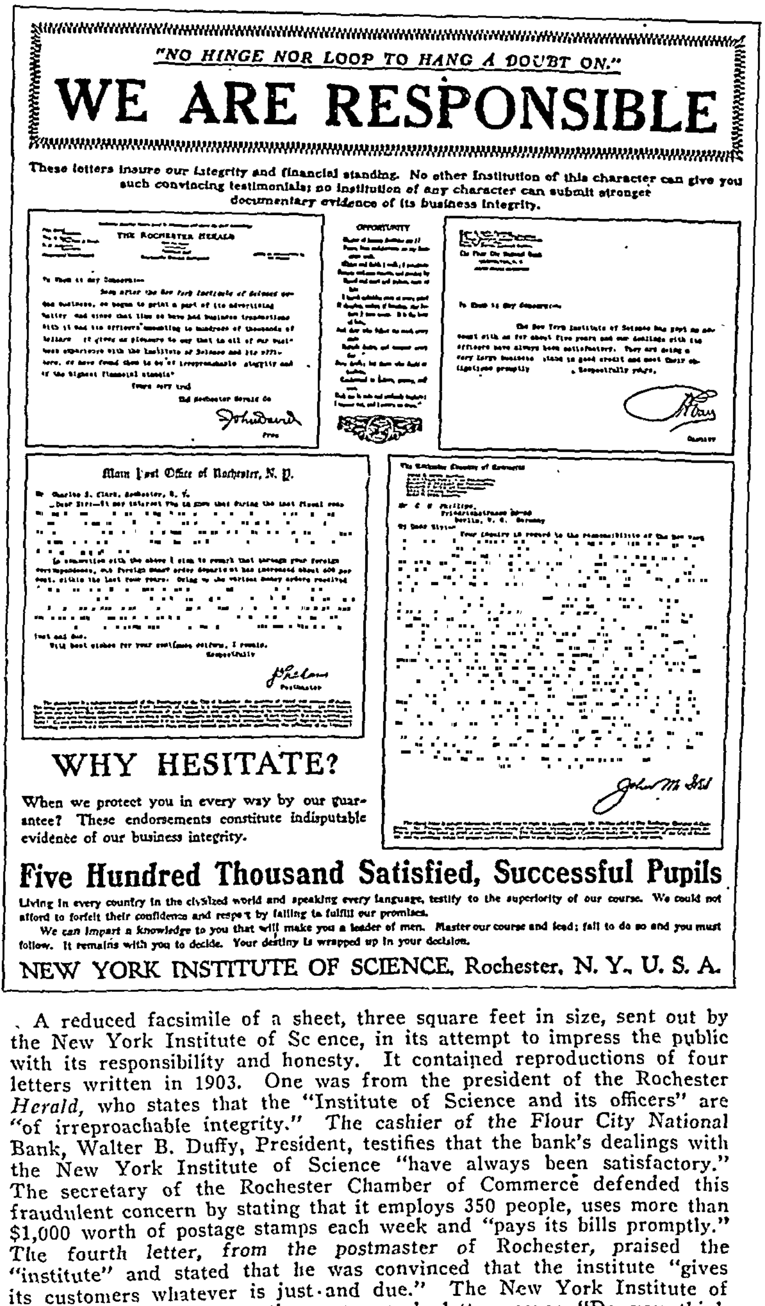
William Beatty, M.D. University of Toronto, Ont., 1880; aged 65; for nearly thirty-five years a practitioner of Dunlap, Iowa; died at his home in Omaha, October 13.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

"LOCAL INDUSTRIES AND THE SOFT PEDAL"

The following letter from Mr. Roland B. Woodward, Secretary of the Rochester (N. Y.) Chamber of Commerce, reached THE JOURNAL office October 14. It was dated September 15, but bore the Rochester postmark of October 13. Mr. Woodward, in answer to an inquiry, hopes that THE JOURNAL will "find it worthy of publication."



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We can impart a knowledge to you that will make you a leader of men. Master our course and lead; fail to do so and you must follow. It remains with you to decide. Your destiny is wrapped up in your decision.

NEW YORK INSTITUTE OF SCIENCE, Rochester, N. Y., U. S. A.

A reduced facsimile of a sheet, three square feet in size, sent out by the New York Institute of Science, in its attempt to impress the public with its responsibility and honesty. It contained reproductions of four letters written in 1903. One was from the president of the Rochester *Herald,* who states that the "Institute of Science and its officers" are "of irreproachable integrity." The cashier of the Flour City National Bank, Walter B. Duffy, President, testifies that the bank's dealings with the New York Institute of Science "have always been satisfactory." The secretary of the Rochester Chamber of Commerce defended this fraudulent concern by stating that it employs 350 people, uses more than $1,000 worth of postage stamps each week and "pays its bills promptly." The fourth letter, *from the postmaster* of Rochester, praised the "institute" and stated that he was convinced that the institute "gives its customers whatever is just and due." The New York Institute of Science, commenting on the postmaster's letter, says: "Do you think that a postmaster, whose business it is to investigate postal affairs and prosecute frauds, would express his satisfaction concerning our business if it were conducted on a fraudulent basis and there existed the least doubt concerning the reliability of the institute?"

> *"To the Editor:*—In 'Medical News,' Volume LXV, Number 11, page 961, top of the page and second column, you have an editorial comment on an incident connected with an address on 'Patent Medicine Frauds,' before the meeting of the American Public Health Association in Rochester.
>
> "It seems to me that the article is in bad taste and is thoroughly unfair in its suggestion. You say: 'Doubtless it was this spirit that a few years ago inspired the Secretary of the Chamber of Commerce of Rochester,' *et cetera.* You do not say *how many* years ago; neither do you name the Secretary of the Chamber of Commerce of Rochester; neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber.
>
> "I have served as Secretary of the Rochester Chamber for nearly seven years — which is more than 'a few years.' The inference to be drawn from your comment is that the *present* Secretary of the Chamber of Commerce of Rochester wrote the testimonial representing the Chamber, in order to not 'hurt local industries, no matter how fraudulent, how subversive of the public good, how dangerous to the public health, so long as the industry brings money to the town.' You evidently don't know the Rochester Chamber of Commerce nor the City of Rochester.
>
> "What I have said concerning the Secretary of the Chamber of Commerce may apply equally to the 'Postmaster of Rochester,' and, so far as I know, to 'the *President of the Rochester* Herald Company.'
>
> "It is such editorials as yours, expressing half-truths, permitting of wrong inferences and endeavoring to slander an entire community, which make honest men hesitate to align themselves with an association or organization that, in its *opposition* to what it deems an evil, loses its sense of fairness and sanity."

The editorial comment to which Mr. Woodward refers appeared in THE JOURNAL for September 11 under the title "Local Industries and the Soft Pedal." It is to be regretted that this comment strikes Mr. Woodward as "in bad taste" and "thoroughly unfair in its suggestion." After going over the matter with a good deal of care and giving due weight to Mr. Woodward's criticism, THE JOURNAL still remains unconvinced that it has done either the City of Rochester, the Rochester Chamber of Commerce, or its secretary any injustice. One statement in Mr. Woodward's letter is, evidently, based on a *misconception of the facts:*

> ". . . neither do you point out that the letter written by John M. Ives, who was (then) the Secretary, although written on the Chamber of Commerce letter-head, was signed by him as an *individual* and not as Secretary of the Chamber."

The facts: Mr. Ives' letter was written to a Mr. Phillips in reply to a question which Mr. Phillips *asked, not of Mr. Ives, but of the Rochester Chamber of Commerce,* about the fraudulent "New York Institute of Science." The "*New York Institute of Science*" not only reprinted Mr. Ives' letter as an endorsement, but emphasized the fact that this letter represented the views of the Chamber of Commerce rather than the views of a private individual by adding:

> "The Rochester Chamber of Commerce looks after the interests of the City of Rochester, and its Secretary would not prepare such a letter in favor of any firm engaged in a business questionable in any sense."

In view of the above facts, THE JOURNAL was certainly justified in assuming that a letter written by the Secretary of the Chamber of Commerce, on the stationery of the Chamber of Commerce, in answer to an inquiry addressed to the Chamber of Commerce, represented the views of the Secretary of the Chamber of Commerce. Mr. Woodward says further that what he has mentioned regarding the Secretary of the Chamber of Commerce may apply equally to the "Postmaster of Rochester," and, so far as he knows, also to the "President of the Rochester Herald Company." Once more, the facts: The letter reproduced by the "New York Institute of Science" was written on the stationery of the "Main Post Office of Rochester, N. Y.," and was signed "J. S. Graham, Postmaster." Likewise the letter from the President of the Rochester Herald Company *that the* "institute" reproduced in its advertising was written on the stationery of the *Rochester Herald* and signed "The Rochester Herald Co., John David, Pres."

Mr. Woodward's statement that we "evidently do not know the Rochester Chamber of Commerce nor the City of Rochester" may be true. We do know, however, that for years two of the most widely exploited and fraudulently advertised "patent medicines" in the country have emanated from the City of Rochester, and we understand that the fortunes amassed from the sale of these products are, today, invested extensively in other Rochester projects. We know, further, that for many years Rochester has been the headquarters of a syndicate of fraudulent mail-order concerns that have fleeced people not only of the United States, but all over the world. Fraud after fraud has been started by this syndicate, flourished rankly and has gone out of existence only when the accumulated experience of the public has nullified the power of its advertising or when the United States Post Office Department has issued a fraud order against it and denied it the use of the mails. What has Rochester done about it?

LAIRD'S RHEUMATISM FORMULA

During the past week or two, physicians in various parts of the country received a circular letter from one Madison R. Laird, Des Moines, Iowa. Mr. Laird's specialty, as indicated by his letterhead, is "Investments." Possibly Mr. Laird may have found the medical profession somewhat susceptible to inducements that are sometimes held out by those in his line of business. At any rate, he came to the profession, *via* the circular letter, with an offer to sell a prescription for "rheumatism" that was "really amazing" in the "prompt results" to be obtained:

> "*Dear Doctor:*—HAVE YOU A PRESCRIPTION THAT REALLY DOES GIVE RELIEF FOR YOUR CASES OF RHEUMATISM?
>
> "If you have not, please read this carefully.
>
> "For some time I have known of a prescription that is particularly efficient and reliable for the treatment of rheumatic ailments, being especially effective and prompt in rheumatic fever. . . ."

And much more to the same effect. Mr. Laird claimed that he had used it himself "for rheumatism and lumbago" and obtained "complete and almost immediate relief." Also, he confided, some of his relatives "have found it equally effective." In spite of his firm faith in the power of his remedy and his apparent belief that the medical profession had nothing as good to offer suffering humanity, Mr. Laird was, it seemed, unwilling to give the public the benefit of his "secret" but was perfectly willing that physicians should give the public the benefit of it—after Laird had been paid for it!

> "Believing this valuable prescription should be known to every doctor, I have decided to sell it to as many as care to send for it.
>
> "I will send you this prescription, with full directions, for $2.00."

One of the physicians who received the Laird circular and sent it in to THE JOURNAL was Dr. W. L. Wilson of Hinsdale, Ill. Dr. Wilson was asked to cooperate with THE JOURNAL in giving the profession and the public the benefit of Madison R. Laird's marvelous prescription to the extent of sending Laird his check for $2.00, for which THE JOURNAL would reimburse him. This Dr. Wilson did and in due time sent both the "prescription" and a letter he received from Laird to the Propaganda Department generously stating that he is "glad to contribute the $2.00 to the cause of advancing the department's work." The "rheumatism formula" was a typewritten affair and disclosed a typical, old-time, shotgun prescription of the polypharmacy period; probably the old prescription-files of half the drug stores in the country contain similar monstrosities. Here it is:

Compound Syrup Sarsaparilla	2 ounces
Wine of Colchicum Seed	1 ounce
Tincture Guaiac	1 ounce
Potassium iodid	1 ounce
Sodium Salicylate	120 grains
Rochelle Salts	60 grains
Water	1 ounce
	4 ounces

COMPOUNDING.—Dissolve the dry ingredients in the water. Mix liquids separately, adding Tincture Guaiac last. Combine the two mixtures, shaking well together.

DIRECTIONS.—Shake well before taking. One teaspoonful in half glass of water three times daily, before or after meals.

Accompanying this marvelous "formula" was a letter to Dr. Wilson in which Laird said:

> "I wish to thank you for your letter; it is one of a very few I have received. [A compliment on the profession's intelligence.—ED.] Several of the others have been 'roasts' of a sarcastic or amusing character. Some of these learned men have actually been insulted to receive such a proposal from a 'layman.'"

Laird further said that for years he had "been an interested reader of medical subjects, and for a layman have a very good knowledge of medicine." He also modestly acknowledged that his "long service as a civil engineer and contractor" had made him "a very good first aid surgeon." The letter closed with a description of the marvelous results obtained from the use of this formula in a case of tabes.

> "Six months ago this man was almost helpless from Locomotor Ataxia, could hardly walk, did not dare raise his eyes above the level and was entirely lost in the dark, could not find his way home after nightfall."

After using Laird's "rheumatism" medicine:

> ". . . he reported that he could go anywhere he pleased day or night without getting lost and the dizzy symptom had entirely disappeared. He has wonderfully improved mentally and bodily and is entirely another man."

The lesson this anecdote conveys to Mr. Laird is, "We sometimes stumble on facts that surprise us and this is one of them." How true! Equally axiomatic it is that we sometimes stumble on fancies that amuse us—and this is one of them.

Correspondence

The Proper Preparation of Food, and the Proposed Founding of Training Schools for Cooks in Connection with Established Medical Colleges

To the Editor:—A letter written by me to a medical journal, dated May 4 last, which discussed the question of human alimentation and proper food preparation in public places, brings up a question of vital concern and therefore appropriate for careful consideration in the ultimate hope that there may be brought forth a generation of cooks fitly prepared by scientific training for their important work. The suggestion was made that the training schools for nurses, and the revolution thus wrought in that line of work, furnished a fair parallel to what was possible in the dietary and culinary service rendered to the public in hotels, clubs, restaurants and the like, and that adequately equipped medical colleges should undertake to provide this educational and dietetic service.

The contention in the letter named was that the physical aspect of people, as seen in city streets, supports the view that there is something wrong in the general manner of food preparation by public caterers, and a single paragraph of this letter will be quoted in illustration:

> Stated generally, the appearance of the crowd in the street tends to confirm this view, not one in five looking either healthy or happy. The facial complexions of persons of all ages and conditions—anemic, chlorotic, icteric, cachectic, in many forms and every degree—would be shocking if not so common as scarcely to arouse comment, and seem to point to a deeply rooted cause or causes operating adversely at the very basis of nutrition and producing effects that are ultimately recognizable by observing medical men in profound disorders of the entire digestive and assimilative tract; among which may be named dyspepsias and diarrheas, indigestion, intestinal inertia, cancers and constipation, hepatitis, appendicitis, colitis and the like.

In THE JOURNAL, May 22, 1915, Graham Lusk discussed the preparation, proper proportioning and serving of foods, especially in connection with a catering concern that has a chain of such establishments in all large cities in this country; and while it may be said that the calories computation is perfect on paper, yet in actual everyday working the ignorance, inadequacy or inadvertence of the cook will nullify every provision, and this conclusion has been reached only after repeated patronage tests of the establishments belonging to the system that is operated in this city.

My criticism of the local catering concern in question would be directed toward the methods of handling the starches served, the half-baked breads and pastries and poorly cooked vegetables—the meats, stews, soups, etc., being as a rule better cooked but often spoiled by overseasoning.

In reply to an inquiry by me as to the possible remedy, Lusk said:

> I think that instruction along proper food lines might be taken up by the dispensaries of medical schools. The medical schools, however, could in my judgment scarcely establish schools of cooking; that should be a part of the curriculum of every public school. I remember in the course in the School of Mines at Columbia which I took you work with small cupel furnaces assaying ores during a period of four months,

giving knowledge which never can be forgotten. It seems to me that cooking schools of the public schools might be associated with municipal lodging houses and the product of such cooking schools could be sold at very nearly cost. Every girl should be taught how to prepare simple foods in a cleanly and proper manner, with full regard for the nutritive value of the article involved.

The public bread supply in St. Louis is a palpable reproach in respect of both integrity and decency; when fraud in half-baking, short-weight or loading the loaf with moisture is not in evidence, foul-fisted handling in delivery is to be seen in every direction. My suggestion would be that instead of the city government attempting to regulate the business of public bread production by legislative penalties, the better way would be for the city regularly to produce a loaf standardized in every respect of weight, quality, baking, price, etc., and by publication inform bread-buyers of those producers who fall below the standard in their goods, and if the people wished counterfeit stuff they would then buy with their eyes open. Years ago bread was baked at the poorhouse for the supply of other institutions that was of uniformly fair quality, and doubtless the same could be done again. In Canada the dominion government relies solely on publicity as a check on the sale and use of misbranded or adulterated goods that enter into household consumption by the inspectors making purchases in the open market; the results of analyses, special findings, etc., then being published, and a well-informed people soon learn to put the frauds out of business.

George Homan, M.D., St. Louis.

Transverse Incision in Operation for Appendicitis

To the Editor:—Since the publication of my paper on this subject (The Journal, Sept. 11, 1915, p. 939), my attention has been called to the fact that the incision at the outer side of the sheath of the rectus, which is an essential part of the transverse incision, was first proposed and described by Dr. Robert Weir in the *Medical News*, Feb. 17, 1900, p. 241. Dr. Weir proposed this as an extension of the McBurney incision, but described definitely the incision in both the anterior and posterior sheaths of the rectus, and the drawing of the rectus back into its sheath. I scarcely understand the mental process which caused me to omit giving Dr. Weir full credit for this important part of the procedure. Like many others, I had practically abandoned McBurney's incision, using chiefly the vertical incision, which is now, I believe, more used than any other. The transverse incision, with Weir's technic at the inner side, is destined by reason of its natural advantages, if properly studied and understood, to become the operation of choice.

A. E. Rockey, M.D., Portland, Ore.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ODOR OF URINE IN PARALYSIS OF VESICAL SPHINCTER

To the Editor:—I have an incurable case of paralysis of the vesical sphincter, and I am anxious to give something to eliminate the foul odor of the urine in this case. What do you suggest?

W. Burnett Weaver, M.D., Miamisburg, Ohio.

Answer.—It is uncertain from the question whether the foul odor complained of is due to decomposition of the urine within the bladder from infection or simply to the decomposition of the urine after it escapes. In the former case it would be necessary to overcome the infection if possible, and it is difficult to give a definite line of treatment for a specific condition when the specific condition is not known. Hexamethylenamin in sufficient doses will prevent or rather retard the decomposition of the urine, provided the urine is of acid reaction, but it will have practically no effect on a foul decomposed alkaline urine, nor is there anything known which, taken by mouth, will entirely eliminate the foul odor in such conditions. If the urine is kept acid in reaction and hexamethylenamin given to delay its decomposition, by scrupulous cleanliness, the odor may be reduced to a minimum.

BOVINE AND HUMAN TUBERCULOSIS

To the Editor:—Will you direct me to the latest literature on bovine tuberculosis as it affects human beings?

E. R. Van der Slice, M.D., Kearney, Neb.

Answer.—The following is a list of references to articles on this subject:

Park, W. H., and Krumwiede, C.: Relative Importance of Bovine and Human Types of Tubercle Bacilli in Different Forms of Human Tuberculosis, *Jour. Med. Research*, December, 1911; ibid., September, 1912; abstr., The Journal, Jan. 27, 1912, p. 306; Oct. 5, 1912, p. 1322.

Establishment of the Exact Significance of Bovine Tubercle Bacilli in Human Disease, editorial, The Journal, Feb. 17, 1912, p. 482.

Eagle, R. T.: Tuberculous Cow, *Texas State Jour. Med.*, July, 1912.

Fraser, J.: Possible Test in Differentiation Between Human and Bovine Types of Tubercle Bacillus, *Brit. Med. Jour.*, Nov. 23, 1912; abstr., The Journal, Dec. 21, 1912, p. 2287.

Bertarelli, E.: Transmission of Bovine Tuberculosis to Man, *Gazz. d. osp.*, Nov. 26, 1912.

Bertarelli, E.: Italian Contributions to the Study of the Relations Between Human and Bovine Tuberculosis, *Gazz. d. osp.*, Dec. 1, 1912.

Keiller, V. H.: Relative Importance of Human and Bovine Tuberculosis Infections in Man, *Texas State Jour. Med.*, December, 1913.

Wankel, J.: Differentiation of Human and Bovine Tuberculosis by Means of Theobald Smith's Reaction Curve, *Deutsch. med. Wchnschr.*, Dec. 11, 1913.

Calmette, A.: Rôle de la tuberculose bovine dans la contamination de l'homme; la question du lait, *Ann. de med.*, Paris, 1914, i, 253.

Ravenel, M. P.: Bovine Tuberculosis, *Illinois Med. Jour.*, June, 1914.

Raw, N.: Human and Bovine Tuberculosis: Treatment by Special Kinds of Tuberculin, *Jour. State Med.*, July, 1914; abstr., The Journal, July 25, 1914, p. 354.

McCleave, T. C.: Relation of Bovine Tuberculosis to Early Tuberculosis in Children, *Am. Jour. Dis. Child.*, September, 1914, p. 210; abstr., The Journal, Sept. 26, 1914, p. 1135.

Beitzke, H.: Fatal Case of Bovine Tuberculosis in Man, *Berl. klin. Wchnschr.*, Aug. 17, 1914; abstr., The Journal, Oct. 3, 1914, p. 1239.

Brooks, H.: Effects of Heredity in Bovine Tuberculosis, *Am. Jour. Med. Sc.*, November, 1914.

BRAN BREAD

To the Editor:—Heretofore I have been inclined toward constipation. Recently I have been eating bran bread, which helps considerably. Can you give me the formula for making this bread? Please omit name.

X. Y., Fort Wayne, Ind.

Answer.—The following is suggested for bran bread: Prepare the two following mixtures:

2 cups of wheat flour
2 cups of graham flour
2 cups of bran flour
1 teaspoonful salt
½ cup sugar
1 level teaspoonful baking powder

2 cups milk
1 cup molasses
1 egg
2 level teaspoonfuls of soda
¼ cup hot water
1 cup raisins

Thoroughly mix the foregoing liquid and solid mixtures, and bake in a moderate oven for one hour. This makes two loaves.

THE DOCTOR'S BAG

To the Editor:—Some time within the past two years I saw an article in The Journal regarding a list of articles which the general practitioner should carry in his bag in order to make a diagnosis. Can you give me any reference to it?

H. Bryan, M.D., Shanghai, China.

Answer.—The article is entitled "The Doctor's Bag," published in the Miscellany department of The Journal, Feb. 27, 1915, p. 767.

REFERENCES TO RHUS

To the Editor:—I am doing a little research work on the rhus group, including sumach, ivy, etc. Can you direct me to the literature on the subject?

J. A. Van Der Hulse, M.D., Akron, Ohio.

Answer.—A very complete bibliography on the poisonous species of rhus, by L. E. Warren, will be found in the *Midland Druggist and Pharmaceutical Review*, 1910, xliv, 149, 218 and 288. Since then Dr. von Adelung has published an important paper in the *Archives of Internal Medicine*, February, 1913, p. 148.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Massachusetts: Boston, November 9-11. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Nevada: Carson City, November 1. Sec., Dr. Simeon L. Lee, Carson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Kansas June Report

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Kansas City, June 8, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 22, of whom 21 passed and 1 failed; 25 candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Howard University		(1914) 82,	84
Rush Medical College		(1915)	89
University of Kansas		(1915) 81, 82, 82, 83, 86, 86, 87, 88, 89, 89,	90
Kansas City Hahnemann Medical College		(1915)	77
John A. Creighton Medical College		(1915)	85
University of Oklahoma		(1915) 81, 81, 85,	86
Jefferson Medical College		(1912)	78
	FAILED		
Kansas City Hahnemann Medical College		(1915)	*

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Med. and Surg.		(1911)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1889)	Iowa
Hering Medical College		(1909)	Illinois
National Medical College, Chicago		(1898)	Illinois
Northwestern University		(1911)	Illinois
University of Illinois		(1914)	Illinois
State Univ. of Iowa, Coll. of Med.		(1912)	Iowa
Hospital College of Medicine, Louisville		(1904)	Oklahoma
Kentucky School of Medicine		(1907)	Indiana
University of Louisville		(1910)	Missouri
Tulane University of Louisiana		(1913)	Louisiana
Medical School of Maine		(1910)	Maine
Barnes Medical College		(1909) (1911)	Missouri
Ensworth Medical College		(1911)	Nebraska
Kansas City Hahnemann Medical College		(1910)	Missouri
St. Louis Medical College		(1882)	Missouri
St. Louis University		(1913)	Illinois
University Medical College, Kansas City		(1913)	Missouri
Washington University, St. Louis		(1913)	Illinois
John A. Creighton Medical College		(1914, 2)	Nebraska
University of Nashville		(1882)	Missouri
Wisconsin College of P. and S.		(1905)	Wisconsin
University of Edinburgh		(1905)	Missouri

* No grade given.

District of Columbia July Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination held at Washington, July 13-15, 1915. The total number of subjects examined in was 17; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 30, of whom 22 passed and 8 failed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Georgetown University (1913) 78.7; (1915) 76.1, 83.5, 84.4, 87.6, 87.8, 88.5, 89.6.			
George Washington University (1912) 78.2; (1915) 78.2, 80.1, 81.8, 81.9, 82.7, 83.2, 84.5, 90.1.			
Howard University		(1914) 78.8; (1915)	75.9
Johns Hopkins University		(1914) 89.3; (1915)	78.3
College of P. and S., Boston		(1905)	83.3
	FAILED		
George Washington University		(1915) 72.2,	74.4
Howard University		(1914) 70, 72,	72.3
University of Michigan Medical School		(1894)	70.3
Fordham University		(1913)	72.3
University of Munich		(1912)	71.4

Book Notices

Educational Hygiene from the Pre-School Period to the University. Edited by Louis W. Rapeer, Ph.D., Professor of Education, Pennsylvania State College. Cloth. Price, $2.50 net. Pp. 650, with illustrations. New York: Charles Scribner's Sons, 1915.

The rapid expansion of the general field of preventive medicine is well illustrated by the publication of this book, covering the entire subject of educational hygiene from the preschool period through the university. The amount of ground covered precludes the possibility of its preparation by a single writer. Professor Rapeer has therefore undertaken to act as editor, each chapter being contributed by a recognized authority. After an introductory chapter by the editor, the public health movement is discussed by Dr. E. H. Lewenski-Corwin, secretary of the Health Committee of the New York City Academy of Medicine; health and heredity by Dr. Davenport of the Carnegie Institution; home hygiene for children by Dr. Ernest B. Hoag of Leland Stanford Jr. University; rural school administration by W. I. Larson, state inspector of rural schools of Wisconsin; open air and open window schools by Sherman C. Kingsley, director of the Elizabeth McCormick Memorial Fund; rural school sanitation by A. C. Monahan of the United States Bureau of Education, etc. The result is a book of thirty-three chapters, each written by a specialist. As only eight of these chapters are prepared by physicians, the book presents the point of view of the educator rather than the sanitarian and should, for this reason, be especially valuable to physicians interested in school hygiene, as offering an opportunity to acquire the point of view of the educator. Of the six chapters on medical supervision of schools, only one, that on medical supervision of the exceptional child, is written by a physician, the other five presenting the point of view of the teacher, the psychologist and the trained nurse rather than that of the physician. The illustrations, charts and diagrams used are numerous and add materially to the value of the work. Some of this illustrated material might perhaps be omitted without injury. Inasmuch as many of the practical problems discussed are still in the experimental stage, however, it is perhaps better to be diffuse rather than dogmatic. In the present stage of development of school hygiene, this book will prove a valuable contribution to the literature of the subject.

The Book of the Fly. A Nature Study of the House-Fly and Its Kin, the Fly-Plague and A Cure. By G. Hurlstone Hardy, with an Introduction by Halford Ross. Cloth. Price, 80 cents. Pp. 124, with illustrations. New York: Rebman Company, 1915.

One of the most important and far reaching developments of the modern scientific study of preventable diseases is the rôle of insects in the spread of disease. As a result, interest in the appearance, characteristics and habits of all insects which come in contact with man has been greatly stimulated. After centuries of close association with the common fly, we are just beginning to learn how little we know about him. Major Hardy's book is perhaps the most complete, from the standpoint of the naturalist, of anything that has so far been published. Evidently his interest in the subject has been lifelong, as the reader is told in the first chapter that, when barely more than 9 years old, he visited an aunt who was a veritable examplar of genteel breeding and propriety after the early Victorian pattern. She seriously reprimanded the child for cruelty in feeding the garden spiders with flies, which were, according to the aunt, "poor innocent creatures made by God for a useful purpose." To this admonition, the child replied that the devil made the flies and that God made the spiders to eat them. While this may not be an adequate explanation for the existence of the flies, it at least accounts for the spiders.

The average reader will be surprised to know that there are in Great Britain nearly 3,000 species of flies, of which 200 are exceedingly common and widely distributed. The characteristics, habits and distinguishing peculiarities of the more important species are described, their dangers as disseminators of disease discussed, and various methods for their control and extermination proposed. While little new matter is brought out under the latter heads, the discussion of the different species, their appearance and the variation in their personal habits is interesting and instructive.

Descriptive Catalogue of the Medical Museum of McGill University. Arranged on a Modified Decimal System of Museum Classification. Edited by Maude E. Abbott, B.A., M.D., Curator. Part 4, Section 1, The Hemopoietic Organs. Catalogue and Didactic Introductions by Oskar C. Gruner, M.D., Pathologist to the Royal Victoria Hospital, Montreal. Cloth. 1915.

McGill University has begun cataloguing the specimens in its large medical museum. A volume representing the portion of this catalogue on the hemopoietic organs has recently been received. Although it will be the fourth volume in the order of the museum classification, it is the first to appear in print. The book was arranged and edited under the personal supervision of Sir William Osler by the Oxford University Press, the cost having been met by funds raised by the medical alumni and friends of McGill University. The term "catalogue" scarcely does the book justice; it is more than that. In fact, it deals in a comprehensive manner with a subject which has not heretofore been attempted, and marks another step in the evolution of objective teaching. A series of specimens has been carefully selected illustrating each of the four subjects dealt with in this volume. For example, eighteen pages are devoted to conditions of bone marrow, thirty pages to lymph nodes, over 100 pages to the spleen and the splenic capsule and the balance of the book to the thymus gland. Each section is provided with a short introduction giving a brief review of the general pathology of the subject, which enables the reader to appreciate any departure from normal conditions. A number of blank pages after each subject have been allowed for subsequent additions. Altogether the book contains 203 pages and is illustrated by twelve elaborate plates. In the preparation of the book the author has carefully observed uniformity of arrangement, logical sequence of material, careful chronicling of macroscopic and microscopic details and a faithful coordination of clinical and pathologic data. Of particular value to those who are developing other museums is the elaborate scheme set forth in this book in numbering museum specimens, by which their proper classification is permitted. An examination of the book enables one to appreciate its great value in medical education, and it will be an important and useful addition to any medical library.

Miscellany

Government Reports on Wages and Hours of Labor

The Bureau of Labor Statistics in Bulletins 177 and 178 gives detailed analyses of wages and hours of labor in the hosiery and underwear industry, 1907 to 1914, and in the boot and shoe industry for the same period. These reports are of particular interest to physicians because of the relation of earnings and hours of labor to the health of the workers. The reports also give data on whole-time employment in these industries, which has an important bearing on questions of unemployment and the distribution of labor. In the underwear and hosiery industry it was found that the average full-time weekly earnings of the employees in 1914 were 2 per cent. higher than in 1913, 8 per cent. higher than in 1912, and 12 per cent. higher than in 1911 or 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 3 per cent. lower than in 1912, and 5 per cent. lower than in 1911 or 1910. The tendency, as will be seen, has been for wages to rise and for the hours of labor to become fewer. This affects to some extent the total earnings, and it was found that the increase in full time weekly earnings between 1910 and 1914 was not so great as in rates of wages per hour. The tables in the report set out all of this matter in detail. One table shows that in 1914 the average full time weekly earnings of males in ten occupations of the hosiery and underwear industry varied from $8.45 for certain lines of work to $22.31 as a maximum. The average full time weekly earnings of females for the same year in twenty-three occupations varied from $6.80 to $10.87.

In the boot and shoe industry the average full time weekly earnings in 1914 were the same as in 1913, 8 per cent. higher than in 1912, 6 per cent. higher than in 1911, and 9 per cent. higher than in 1910. The average full time hours of labor per week in 1914 were 1 per cent. lower than in 1913, 2 per cent. lower than in 1912, and 3 per cent. lower than in 1911 or 1910. The average earnings per hour for 1914 were 1 per cent. higher than in 1913, 9 per cent. higher than in 1912, 10 per cent. higher than in 1911, and 12 per cent. higher than in 1910. In this industry, as in that of the hosiery and underwear, owing to the reduction of hours, the increase in full time weekly earnings between 1910 and 1914 was not so much as in rates of wages per hour, thus affecting to some extent the total earnings. In 1914 the average full time weekly earnings of males in twenty-seven specific occupations varied from $15.37 to $27.68. In the same year the average full time weekly earnings of females in ten specific occupations varied from $9.12 to $13.14. On the whole, in both of the industries mentioned, the total earnings, notwithstanding the reduction in hours of labor, have been increased. It was found in eighty-three boot and shoe establishments in 1914 that the average loss of days during the year, aside from holidays, was eight days. No satisfactory comparison in this respect with other years is made on account of lack of data, the work of securing the information and many other considerations entering into the exact figures.

These reports indicate that in the cases of women employees the minimum wages are considerably below the amount considered by various investigation commissions in different parts of the country to be adequate for healthful and comfortable living, and the maximums mentioned do not much exceed the minimum requirements. In the cases of the men, the figures seem to be adequate, but, of course, do not take into consideration the fact that many wage earners are the heads of families in which there are a number of individuals depending on them for support of a kind which would insure sufficient nourishment, proper housing and living conditions to say nothing of provision for education or a few of the luxuries.

The Smoke Nuisance

O'Connor (*Popular Science Monthly*) remarks that the economic argument is the one commonly regarded as final on the smoke question. He thinks that a more powerful indictment may be drawn up under four heads, namely, the effect on (1) building materials, (2) meteorologic conditions, (3) vegetation and (4) health. 1. Apart from the soiling of surfaces, destructive of artistic effects from color contrasts, smoke helps to destroy stone and metal by the acid products of the combustion of coal. This action is especially marked on any stone containing calcium or magnesium carbonates. Metal work in a smoky city like Pittsburgh, moreover, lasts only half as long as in one free from smoke. 2. There are fewer hours of sunshine, and the sunshine is less intense in smoky cities than in those that are free from smoke. 3. Gases and smoke have an injurious effect on vegetation. Soot inhibits plant growth by the corrosive effect of the contained acid and also by blocking up the stomata and impeding transpiration, by coating leaves, thus reducing the intensity of sunlight and affecting the assimilation of carbon dioxid. 4. The results of medical investigators tend to show that smoke greatly increases the incident severity and mortality of acute diseases of the air passages; pneumonia and bronchitis increase directly as smoke increases. The purification of the atmosphere should therefore receive the same attention as pure food and pure water are receiving, for it is just as important.

Infant Mortality in Bavaria

In spite of all the efforts made to lessen the infant mortality in Bavaria, the death rate is higher now than before. During 1914, 38,467 children under 1 year of age died, as against 36,805 during 1913. There were 21,570 male children and 16,897 female children. Of the children born in 1914, 19.3 per cent. died, as against 18.2 per cent. in 1913; 21 per cent. of the male children and 17.4 per cent. of the female children died. More than one-third of the children that died during the first year of life were not more than 1 month old. About one-half died before the end of the third month. Most of the deaths occurred during August and September. The highest infant mortality by percentages occurred in the smaller communities.

Medicolegal

The Power of a Trial Court to Order Physical Examinations

(State ex rel. Parmenter vs. Troup (Neb.), 152 N. W. R. 748)

The Supreme Court of Nebraska says that it is seldom that it is called on to determine a question of more importance or on which there is so clear and determined a difference of opinion among the courts of last resort in the several states, as that of the power of a trial court under any circumstances to order a party to submit his or her person to expert examination. The Supreme Court of the United States has been divided on the question, and has presented both sides of the controversy in an opinion and a dissenting opinion, the latter by Mr. Justice Brewer, and concurred in by Mr. Justice Brown. While the courts of last resort of nearly a dozen of the states of the Union have refused to indorse the reasoning of Mr. Justice Brewer, and have given reasons of undoubted force and clearness for such refusal, the courts of at least twenty of the states have reached his conclusion, in favor of the power in question.

Although the precise question here presented, whether the trial court has under any circumstances the power to order such an investigation, has perhaps never been directly and definitely considered and determined by this court, there are several cases in which expressions have been used that might be considered as indicating the opinion of the court as to the policy of the Nebraska law, and, since the case of Stuart vs. Havens, 17 Neb. 211, was decided thirty years ago, the trial courts have generally exercised such power. It has also been understood by the courts of other states that this court has decided that the trial courts have such powers, and their decisions class Nebraska among the states so holding. In view of this long-established practice in the state, and that there must otherwise often be a failure of justice, the court concludes that it should recognize this power of the trial courts. In other words, it is held that, in an action for damages caused by injuries to the person, the trial courts have power to order an expert examination of the person of the party injured, when the circumstances of the trial make it necessary to do so and no substantial harm can result therefrom. Such examination will not be ordered unless it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without.

It is possible that, in some instances, a delicate and sensitive lady may suffer and endure a great wrong and injustice rather than present her cause for a public investigation to any court which would require her to allege in her petition and detail in her testimony facts in regard to the condition of her person which her sense of delicacy would forbid her doing. In such case she must elect, before bringing her action, whether she will bear the ills she has or fly to others that she knows not of. In bringing her action she must declare in public fashion the conditions to be investigated, and the law requires that in any legal investigation of facts the best evidence available must be produced. She may decline to present such conditions for investigation; but if she does bring them before the court, she cannot dictate the means of investigation by selecting such expert witnesses as she may have reason to suppose have opinions favorable to her cause, and rejecting those that might form contrary expert opinions on ascertaining the facts. In modern times the medical profession has the benefit of skilful women physicians, and ordinarily, other things being equal, such physicians ought to be preferred when reasonably practicable, if desired by the woman to be examined. If such an application is made for the purpose of embarrassing or coercing the plaintiff, the trial court will be quick to discover that purpose, and will order it only under conditions above indicated, and when it clearly appears that a condition exists that can be definitely determined by such examination and cannot be satisfactorily determined without it.

Sufficient Evidence of Promise to Pay for Operation

(Thomas vs. Boruff (Calif.), 148 Pac. R. 226)

The District Court of Appeal of California, Second District, affirms a judgment in favor of the plaintiff, a surgeon, who sued in his own behalf and as the assignee of another surgeon, a Dr. Southworth, for services rendered in performing an operation on one Henry Caystile, a brother-in-law of the defendant. The court says that the evidence tended to prove that, while Dr. Southworth had theretofore treated Mr. Caystile, he was not under employment by him at the time the operation was performed; that the defendant asked him to perform it, and the defendant, on being told by Dr. Southworth that the latter had spoken to Dr. Thomas regarding the matter, personally requested him to perform the operation, and said: "I want you to give him all the service that is possible, every attention, and I will foot the bills." On the morning when the operation was performed, in conversation with both the plaintiff and Dr. Southworth, the defendant said to the former, "I suppose you have called me in here for the purpose of having me say that I will pay for these services. Well, you boys go ahead and fix him up the best you can, and I will pay the bill." On the plaintiff telling the defendant that the operation was necessarily attended with great danger and uncertainty, he replied, "Go ahead and do the best you can for him." Another witness testified that the defendant said to the plaintiff to do the best he could for the man, and he (the defendant) would pay the bill. Not only did this testimony strongly tend to establish an original promise on the part of the defendant to pay for the services, both of the plaintiff and of Dr. Southworth, but the testimony of the defendant himself was corroborative of this view. His testimony was that, on Dr. Southworth requesting him to "stand for the expense," he said, "Yes, I will stand for the bill if you will allow me to select the man to operate," to which Dr. Southworth replied, "Well, I have selected a man and Henry wants me." "I know he does," said the defendant, "he prefers to have you, but I will not pay the bills on your account." To this Dr. Southworth answered, "I have secured Dr. Thomas; he is a good man," to which the defendant replied, "Go ahead, if he wants you; go ahead." This evidence might very properly be construed as a waiver of the defendant's wish to name the operator as a condition of paying the bill. Conceding that, even if the defendant had not promised to pay the bill, the plaintiff and Dr. Southworth might nevertheless have rendered the service, it was sufficiently clear, the court thinks, that before the performance of the operation the defendant made an original promise to pay the expense, and that the plaintiff and Dr. Southworth relied on such promise.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Southern Medical Association, Dallas, Tex., Nov. 8-11.

INDIANA STATE MEDICAL ASSOCIATION

Annual Meeting, held in Indianapolis, September 22-24, 1915

(Concluded from page 1397)

The Function of the Tonsil

Dr. Marcus Radvin, Evansville: The function of the tonsil is still a mooted question. Some authors believe that it secretes an antitoxin and furnishes moisture for deglutition. The last statement I believe is partly true, for I have seen several patients who complained of dry throats for months after their enormously hypertrophied tonsils had been removed. The close relationship that often exists between acute articular rheumatism and acute tonsillitis has been observed for many years. At times the joint and throat symptoms are simultaneous in their onset. Endocarditis and pericarditis not infrequently follow even very mild attacks of acute tonsillitis. Chorea may be present, with or without cardiac or arthritic symptoms. Acute, subacute or chronic parenchymatous nephritis are beginning to be looked on as possible sequelae of tonsillar infections. The relation of the tonsil to cervical adenitis seems to be well established clinically. Its relation to pulmonary tuberculosis has been noted by a sufficient number of careful observers. The tonsil bears some relationship to hyperthyroidism. I have heard of two cases of acute appendicitis which followed closely streptococcic tonsillitis. Is the voice sometimes injured by the operation, as the public seems to believe? Specialists who have had a considerable experience with professional singers guardedly admit that for a short time after the operation there is an alteration in the voice, followed in a few months by marked improvement, so much so that higher and more melodious tones were attained than before the operation, and they advise that singers should be cautioned to abstain from singing for a while, or to sing only in low registers. If alteration of the voice is permanently noted, it is due to injury of the pillars and adhesions, which hinder the mobility of the throat musculature.

DISCUSSION

Dr. William S. Tomlin, Indianapolis: I have had some experience in operating on tuberculous patients. In these cases the tuberculous process had seemed to be in the lung, the patients having previously had a slight temperature elevation and complained of being below par. In half a dozen of these cases I have removed the tonsils with most gratifying results. There has been improvement in general health, and the patients were able to leave the sanatorium. I have also had some experience in goiter cases, which in two was very satisfactory; but in two other cases, tonsillectomy did not seem to have any effect on the goiter.

Dr. C. Norman Howard, Warsaw: With regard to removing the tonsils in singers, I have come to the conclusion that it is not the removal of the tonsils but the damage to the pillars that makes the trouble. In every case in which we remove the tonsils, it should be done only because we know definitely that in that particular instance the patient will be better with them out.

Dr. F. V. Overman, Indianapolis: A man who treats most of the famous singers in the East insists that after a voice is placed while the singer has his tonsils, their removal invariably changes the timbre of the voice.

Dr. George W. Spohn, Elkhart: In hyperthyroidism, the literature tells us that patients grow worse on removal of the tonsils. According to some, there is a certain relationship between the ovaries in woman and the tonsils. Whether or not this is true, I do not know; but men working along the line of internal excretions say that it is. I cannot imagine that I would remove the tonsils to cure hyperthyroidism.

Dr. L. C. Cline, Indianapolis: I see an evidence of the profession coming around to a sane position on the question of tonsils and adenoids. They have run riot, until the public has been educated to the point where people come to a specialist and demand that their tonsils be removed, even without an examination. There are tonsils which do not need to be removed. Large, hypertrophied tonsils which are an obstruction ought to be removed, and also some of the tonsils which probably produce quinsy. The point I want to make especially is that there is a lot of this work of removal of tonsils being done which is absolutely wrong and unnecessary. We must examine our tonsil patients and treat them as we do patients with other conditions.

Dr. Lafayette Page, Indianapolis: I have had some very successful results with tonsillectomies in singers, some asserting that their voices were improved by the operation. Others have said that there is difficulty in getting the tones for a certain length of time, but after a year or two I have not seen a single case in which the quality of the voice has not been restored.

Dr. A. E. Bulson, Fort Wayne: The sooner we arrive at the conclusion that every case is a law unto itself, the better it will be for us. Not only must the tonsil be studied in every case, but also the patient as a whole. We have all had patients with repeated attacks of rheumatism who report themselves as improved or well following the removal of the tonsils, and some of them did not look very much infected either. On the other hand, we have had patients with rheumatism who did not recover following tonsillectomy, because the infection was elsewhere in the body.

Dr. C. J. Adams, Kokomo: Loeb asserts that there is no direct connection between the tonsillar glands and the apices of the lung.

Dr. Marcus Ravdin, Evansville: In operation on singers, Hudson Makuen favors tonsillectomy within the capsule. Leaving the capsule separates the pillars. It is the fossa tonsillaris, and not the tonsil, that affects the voice. The lymph supply of the tonsil is of great importance—greater than the blood supply. If we demonstrate that the tonsil has no direct connection with the cervical glands and other lymphatics, then the whole theory of the tonsil as an atrium of infection is wrong, and we are slaughtering tonsils for nothing. The latest German literature demonstrates the connection of the tonsils with the deep cervical glands, and again the deep cervical glands communicate with the lymphatic branches of the bronchial glands, forming a direct lymphatic connection with the apices of the lung.

Chronic Suppurative Mastoiditis, Accompanied by Intracranial Pressure: Case Report

Dr. Edwin J. Lent, South Bend: Man, aged 57, with negative family history, at age of 17 was struck on the head with a baseball bat, and had pneumonia at age of 22. A few years later he fell from a barn, a distance of about 25 feet, lighting on feet and buttocks in a sand pile. Sharp hemorrhage from right ear and nose occurred. He has had a foul-smelling discharge from right ear since childhood, without history of exanthems preceding. No treatment followed except an occasional washing. He has had a great deal of headache for the past ten years, especially during last two years, the pain being located chiefly in the vertex and radiating toward the frontal region. Examination disclosed external canal full of foul-smelling pus, eardrum practically destroyed and middle ear full of granulation tissue and polypi. Hearing reduced to watch contact. No tenderness over mastoid. Transillumination of mastoid cells showed bone to be eburnated. Caloric and rotary tests negative. Pulse 72, temperature 98.6. Vision 6/7 in both eyes. No evidence of choked disk. Tentative diagnosis of chronic mastoiditis with either extradural or intradural abscess complicating, was made. Operation advised, but refused. Patient continued to work.

Eight days after examination he fell on the street twice on his way to work. The next day he developed a paralysis in left arm and leg, and was taken to hospital. At this time cerebration was slow; urine and feces involuntary; severe pain in left temporal region and vertex; paralysis of left arm and leg; reflexes lost in left foot, normal in right; pupils equal in size; ocular movements slow. Temperature 98.6, pulse 70, full and firm. Drowsy most of the time. No neck rigidity. Operation on following day. Whole middle ear thrown into one large cavity, thoroughly curetted and dried. Eustachian tube burred out. Close inspection did not disclose any opening in floor of skull, except a small one which was made during excavation into antrum. This was enlarged, cavity flushed out with normal salt solution, and dura carefully inspected. It was not bulging. Incision then continued from upper angle to vertex; skull bared and a second button removed. In upper half of opening the dura was clearly bulging and looked pathologic. Drainage tube was inserted after dura was incised, and about 6 ounces of straw-colored fluid mixed with chocolate-colored débris evacuated. The day following operation the patient had fairly good use of left arm and leg; had some pain in the head. Continued in this condition for five days, when he became somewhat restless and noisy. Five days after operation complete paralysis of left arm and leg again ensued. Two days later he developed convulsive seizures, about fifteen minutes apart. March 15, five weeks following operation, drainage from the brain cyst was still continuing in large quantities. Much care had been exercised to keep the wound from becoming infected. At this time the nurse was directed to use no more caution, and the wound was deliberately allowed to become infected, as it was believed that by this time the brain tissue was well walled off. A smear was made from the pus, and an autogenous vaccine prepared, and given. The discharge began to lessen materially, and in twenty days had entirely ceased. The patient is now in good health.

DISCUSSION

Dr. John F. Barnhill, Indianapolis: I doubt very much that the ear had any relationship whatever to the brain cyst. It seems to me that the diagnosis in this case was made on too few symptoms, although the subsequent events proved that it was correct. As to the infection of the cyst, I do not know any precedent for it. It was very extraordinary, but the patient is well, and we never can speak against that sort of thing effectively. But I believe that if Dr. Lent were treating another similar case, he would be just as careful not to infect as he was in this case, although the infection possibly caused the closure of the cyst, just as a curettement might have done. But the dissection of the cyst, freeing it entirely from the brain cavity, would probably have done it at an earlier date than by the infection of the cyst wall.

Dr. George F. Keiper, Lafayette: This case brings up the question, How many brain cysts are due to trouble within the middle ear?

Dr. Edwin J. Lent, South Bend: This patient apparently had a general cerebral involvement. Whether or not there was meningeal irritation I do not know. The temperature never went above 99; pulse was from 70 to 80. The man was apparently normal, with this meningeal irritation and the focal symptoms going on. This case teaches that we should look for these symptoms and cysts once in a while. As Dr. Barnhill said, if I had another case of this kind to deal with, a smaller cyst, I would attempt to dissect it out.

The Defenses of the Upper Respiratory Tract and Their Preservation

Dr. Walter N. Culmer, Bloomington: The natural defenses of the body are essential and inherent elements of each involuntary act. The respiratory function of the nose is controlled by defensive means that involuntarily serve to maintain the proper amount, quality and physical conditions of the air entering the breathway. Adequate ventilation of the nasal chambers, sinuses and postnasal space serve to maintain, on the one hand, the useful purpose for which the defenses operate, and, on the other hand, to sustain the integrity of the mucous membrane in the remote parts of the nasal cavities. Further down in the upper respiratory tract is a collection of lymphoid tissue whose relationship to the surrounding parts and to the economy in general has not been accurately determined. In order to preserve these natural defenses it is necessary to know the conditions that prevent their successful operation. A knowledge of the physiologic defenses reveals the fact that the relation of the upper respiratory tract to the development and growth of the body is so intimate that a study of the local changes, without noting at the same time the constitutional requirements of the individual, will often accomplish very little. One of the most forward steps in the direction of the preservation of these defenses is the medical inspection of schoolchildren.

DISCUSSION

Dr. Paul B. Coble, Indianapolis: It is essential to good health and the general well-being of the individual that the upper respiratory tract be kept in the best possible condition. Much good can be accomplished by the medical inspection of schoolchildren in many instances.

Dr. W. S. Tomlin, Indianapolis: This paper deals with the basic principles of our work. Take, for instance, children with defective tonsils, which are interfering with the child, and in which we are sometimes asked how early they should be removed. My impression is that they should be removed as early as they give trouble. Regarding operative work in the nose, my position is a little different from that of most operators. I make submucous resections as early as 8 years of age, and would feel inclined to make them even earlier if the condition were sufficiently pathologic to demand more nasal space.

Dr. Walter N. Culmer, Bloomington: My object was to bring out a little more clearly the importance of the interrelationship of disturbances in the nose and throat with those in other parts of the body. I do not care to do septal and middle turbinal operations until after puberty, or until puberty, at least.

Chronic Suppurative Ethmoiditis

Dr. William S. Tomlin, Indianapolis: The diagnosis of chronic suppurative ethmoiditis to be effective must develop as far as possible the causative factors, nature and extent of the pathologic condition and its bacteriology. Displaced and supernumerary cells, abnormal or unusual relationships of the cells to each other and to surrounding structures, and dehiscences in so far as possible, all depending largely on the roentgenogram, are integral parts of a working diagnosis. Extension of ethmoid cells beyond the capsule in the frontal, orbital, maxillary, sphenoid and middle turbinate structures are not uncommon in suppurative cases, and not only serve to continue the processes before operation, but also may be the most important factors in determining the whole course of the case. Transillumination gives some information, especially of the maxillary and to a lesser extent the frontal sinuses, but is not so dependable as well-interpreted roentgenograms, which perhaps should not be omitted in any case. Stereoscopic plates have served to improve the interpretations, and are of the most signal advantage in cases with circumscribed involvement. The treatment of chronic suppurative ethmoiditis is essentially surgical. Vaccines have not given the satisfaction expected of them. Without operation no benefit whatever has been observed by me.

DISCUSSION

Dr. Joseph D. Heitger, Bedford: Rest of the diseased part, ventilation and drainage constitute three great principles of surgery, and in the nose we obtain the first by the application of the latter two. One should examine the visual field in all accessory sinus diseases, as there is often associated an enlargement of the blind spot, ring and central scotomas.

Dr. John F. Barnhill, Indianapolis: I look on the ethmoid as one of the most complicated pieces of anatomy in the human system. The brain is close above, the eye externally and the nose internally, with all its suppurating cavity emptying near by. The interior of this capsule is filled with two sets of large vessels, and the cells often extend abnormally up into the frontal sinus, extending posteriorly and overhanging frequently the sphenoidal sinus, and enveloping the optic nerve. It is our duty to know as much about the anatomy of the ethmoid cells as it is possible to know before we attempt this kind of surgery. I look on it as the most difficult of all surgery. As surgeons, we work too often under cover about the larynx, the ear and the sinuses. We ought to take the cue from the general surgeon and work in the open.

The Blood-Clot Dressing in Closing the Wound in Operations for Simple Mastoid Abscess

Dr. K. K. Wheelock, Fort Wayne: In thirteen consecutive operations for simple acute mastoid abscess I have closed the wound primarily, employing the coagulated blood as a dressing for the dead spaces in the exenterated mastoid. These thirteen patients had a necessary detention in the hospital of ninety days. This would show an average of six and one-third days for each case; all left the hospital at the end of seven days except one, and she left on the sixth day. This patient developed a mild attack of erysipelas on the fourth day, but the mastoid wound was not invaded. In another case, a young woman with a nursing baby developed a double mastoid abscess with suppuration from both ears. Her mastoids were exenterated and closed with catgut sutures over a blood-clot dressing. She left the hospital on the seventh day.

DISCUSSION

Dr. J. O. Stillson, Indianapolis: The same rule holds good with regard to this question of blood-clot dressing as holds good in surgery anywhere—each case is a law unto itself, and must be considered in that light. In acute cases, in which it is desirable to shorten the treatment, when there is no necrosis of bone, we all like to get healing by first intention, and I think that this method would probably be of value. But in cases of long sickness due to bacterial invasion, I do not think the process of treatment would be entirely satisfactory.

Dr. W. A. Hollis, Hartford City: I have used this blood-clot dressing in one case, with such satisfactory result that I am persuaded to use it again. It seems to me that if infection should occur, it would be a simple procedure to clean the cavity out and pack it in the usual way.

Dr. A. E. Bulson, Fort Wayne: The strange thing to me is that after having been introduced and carried on by some prominent operators for nearly fifteen years, this method is not more popular. The first case in which I used the blood-clot dressing was so successful that I thought it was ideal. In the second case in which I used it, the patient nearly died with infection. My third patient also had infection, and so I consulted some of my confrères with regard to their experiences. I found that their experiences had been very similar to mine—that some of the cases were very satisfactory, and when satisfactory it was ideal, but that occasionally they had infections, and that, in their judgment, it was a rather dangerous procedure.

Dr. John F. Barnhill, Indianapolis: My experience with this method has been similar to Dr. Bulson's; the failures were abominable, and the successes were brilliant. In the streptococcic infections and cases in which the wound must necessarily be very large, because the cells are extensive, it is hazardous to use this method in a certain percentage of cases, and we cannot tell beforehand. I use the modified blood-clot dressing in nearly all of my acute cases. It shortens the process of healing several weeks, as a rule, the average in my last hundred cases being something between two and three weeks. By the modified blood-clot dressing I mean putting in a small cigaret drain to carry away any infection that may be in the center of the clot.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA

Sixty-Fifth Annual Meeting, held in Philadelphia, Sept. 20-25, 1915

(Concluded from page 1484)

Pyelitis in Infancy and Childhood

Dr. Fred E. Ross, Erie: This condition is an acute infection of the urinary tract which may become chronic, and is almost always protracted in its course. It would seem that its supposed infrequency is due to its nonrecognition, as many cases hitherto differently diagnosed have been shown to be pyelitis. The infecting organism is most often the colon bacillus. While the route of infection is not known in all cases, a direct route from the ascending colon to the right kidney by way of a chain of lymphatics is suggested in many instances. Diagnosis rests on microscopic examination of the centrifugalized sediment of a sample of urine or on a series of such examinations. While most cases run their course uninfluenced by treatment, I use either alkaline diuretics to render the urine alkaline, or rather large doses of hexamethylenamin.

Albumin was found in the urine in 50 per cent. of my twelve cases.

DISCUSSION

Dr. George E. Holtzapple, York: This condition should be borne in mind as the possible cause of irregular, obscure fever, general debility attended by pallor, loss of appetite and gastro-intestinal disturbances in children. It may or may not be associated with cystitis, and a differential diagnosis is not always easy. Pain in pyelitis may simulate appendicitis, and I have seen a case of this kind brought to the hospital for operation. It is of paramount importance to discover the pyuria and determine the nature of the infection. The pediatrist should be alert lest a possible case of the condition be overlooked.

Dr. J. P. Crozer Griffith, Philadelphia: In every case of an infant with irregular temperature in which the cause is not absolutely clear the urine should be examined. The diagnosis is then readily made. I have had four or five cases of this disease under my care at one time.

Medical and Surgical Treatment of Tuberculous Peritonitis

Dr. Theodore J. Elterich, Pittsburgh: Since Koenig in 1884 proposed laparotomy as a cure for tuberculous peritonitis, surgery seems to have taken the place of medicine and claims an almost exclusive right for its intervention. It has never been shown, however, that laparotomy has had a specific influence in increasing the resistance to the tubercle bacillus. The most prominent symptom of the disease is ascites. While the pleural cavity may be tapped without danger, the needle in abdominal puncture for the relief of ascites may penetrate adherent intestinal walls. The medical treatment consists in hygienic, dietetic, local and internal therapeutic measures. Heliotherapy is warmly advocated in all forms of tuberculosis by Dr. Rollier of Switzerland. In visceral tuberculosis the results are said to be excellent. My own experience with the medical treatment, although limited, is gratifying.

Morbidity and Mortality From Certain Communicable Diseases of Childhood as Influenced by Public Health Control

Dr. B. Franklin Royer, Harrisburg: The total morbidity of any communicable disease is always greater than the reported figures, because of influences beyond public health control. The only true index of the communicable diseases of childhood is the death rate, because certificates of death must be issued. The morbidity of typhoid fever is well tabulated. From a total of 24,471 cases in 1906 the number of typhoid cases declined to 7,547 in 1914. Measures influencing the incidence of typhoid fever have an even greater effect on the mortality of diarrhea and enteritis. Deaths from measles have shown a general tendency to decline under the measures imposed by the public health authorities. This is also true of deaths from diphtheria. The number of deaths from whooping cough is cut in half. Scarlet fever has not shown the same tendency to decline. Until more is known of etiology and of the communicability of the disease, we may not hope for the best results. Educational work perhaps counts more, except sanatorium care, than any other line of public health work in the reduction of tuberculosis.

Significance of Cardiac Pain

Dr. David Riesman, Philadelphia: Causes of pain in the region of the heart may be classified as cardiac and extracardiac. Among the latter, dyspepsia, herpes zoster, pleurisy and pleurodynia are most common. Of the cardiac causes, myocardial weakness is of great practical importance, as it may be overlooked because murmurs are often absent. In addition to aneurysm and pericarditis as causes of cardiac pain may be mentioned angina pectoris and aortitis.

DISCUSSION

Dr. Lawrence Litchfield, Pittsburgh: Of two cases of which I have knowledge, one patient had been attended by the best men in the country and finally died from an anginoid attack without any one ever having told her that the cardiac pain was grave. The other case was of the type presenting pain in both arms. The cardiac disease was not regarded as serious, but the man died within a month in an anginoid attack.

Dr. James E. Talley, Philadelphia: In cases in which you suspect angina pectoris, the less you find wrong with the heart on examination, the surer you may be of your diagnosis. In a large series of cardiovascular and cardiorenal cases, about 500 in all, there were thirty-five of genuine angina pectoris; one third succumbed to an acute anginal attack and two thirds to gradual cardiac death.

Dr. S. Solis Cohen, Philadelphia: Two very important points in this discussion are syphilitic aortitis, and so-called pseudo-angina. Syphilitic aortitis is often mistaken for angina, the syphilitic nature is therefore overlooked, and the patient is allowed to get into a much worse condition than need be. I have observed many cases of so-called pseudo-angina in which the pain occurs without structural lesions in the myocardium, coronary arteries or the aorta, in which on proper recognition and treatment the pain may disappear and the patient live, as in one case under my observation, for more than twenty-five years.

Dr. Robert N. Willson, Philadelphia: There are two distinct types of true cardiac pain, the dull heavy pain of distention and dilatation, and the sharp cutting pain of aortic valve and aortic disease. It is questionable whether angina may properly be included under cardiac pain. I believe there is no such entity as pseudo-angina pectoris. The cardiac nervous mechanism, including the ganglions of the auricles and of the coronary sinus under the influence of nicotin, show definite signs of disease, and I believe that here eventually will be found the real seat of angina. If so, it will again become permissible to speak of angina as cardiac pain.

Treatment of Myocarditis

Dr. James M. Anders, Philadelphia: Treatment must be varied in accordance with the lesions and the dominating cause when ascertainable. When this cause is rheumatism, antirheumatic measures must be persevered with and the heart carefully guarded by stimulants. Modification of the antirheumatic treatment may be indicated by cardiac weakness. Digitalis is harmful when the myocardium is the seat of an acute inflammatory degeneration. In all forms of severe acute myocarditis prolonged, absolute rest is enjoined. When syphilis is the causal factor, intensive antisyphilitic treatment may be curative. In chronic myocarditis, the exclusion of chronic valvulitis is exceedingly difficult and often impossible after murmurs have appeared in chronic myocarditis. It is obvious that everything tending to throw strain on the myocardium must be avoided. In the treatment of the stage of compensation, gentle exercise that will not tax the physiologic reserve force of the already weakened myocardium should be encouraged, but fatigue is to be avoided. While there is no sovereign remedy for chronic myocarditis, in cases dependent on syphilis, mercury and salvarsan in alternation may be beneficial. The intravenous administration of the salvarsan, however, should not be employed. In diet, a low protein content, from 60 to 70 gm. daily, especially if nephritis be associated, is indicated instead of the average of 120 gm. The intake of flesh foods, strong stock soups and legumes should be minimized, and all articles causing intestinal fermentation in the individual case must be eliminated. My practice is to formulate a diet on these suggestions, adding about 60 gm. of fat, and modifying the dietary as indicated in individual cases. A suitable change of air may be beneficial in selected cases. Mineral springs may be useful, but these waters must be used cautiously. Carbonated baths are beneficial in appropriate cases. Symptomatic indications in this stage must be met in accordance with therapeutic principles. In the management of the stage of insufficiency, physical and mental rest are imperative and will in some cases overcome the dilatation; in others rest must be supplemented by the use of a cardiac stimulant to overcome passive visceral congestions and restore the compensatory mechanism of the heart. The untoward effect of prolonged rest may likewise be minimized by resistance exercises carefully conducted by a skilled operator. Digitalis if administered should be given cautiously in small doses combined with an arterial relaxant. In decided failure of compensation I have found most useful a combination of strychnin, 1/40 grain; caffein citrate, 1 grain, and spartein sulphate, 1/4 grain. Venesection may be useful in excessive hypertension in threatened apoplexy. Saline purgatives are beneficial. Diet here is of much importance. The digestible proteins may be freely allowed, with the exception of those rich in purin bases. The fluid intake should be lessened, especially when edema is present.

DISCUSSION

Dr. David Riesman, Philadelphia: The term "myocarditis" is rather loosely used when applied to acute diseases. Chronic myocarditis is never a single process. The functional and structural changes in the vessels, lymphatics, arterioles and viscera should be studied from the functional and anatomic standpoints. In the treatment of acute myocardial degeneration, the essential point is food. When milk is given as the sole diet, lactose should be added. We must adapt the patient's life and activities to the capacity of the heart as nearly as we can determine that capacity. Unfortunately, we have no definite test for the functional capacity of the heart. When compensation is once lost, rest and digitalis are the main remedies.

Inadequacy of Ordinary Methods of Disinfecting Typhoid Stools

Dr. Edgar M. Green, Easton: Reports received from about thirty hospitals throughout the state show that most of the institutions are disinfecting stools with chlorinated lime or phenol (carbolic acid) or some of the composite commercial disinfectants, while the period of time allowed for disinfection varied from a few moments to an indefinite period. Pathologic experiments show that such disinfection is useless. Steam sterilization can be made complete in a typhoid stool in from twenty to thirty minutes. The method is both thorough and economical, and should be insisted on in all hospitals. At present not more than 16 per cent. of our hospitals are using this method. In private practice where steam is not available, the well broken up stool should be exposed to a 6 per cent. solution of commercial formaldehyd for at least two hours, or else the stool should be treated with a cupful of commercial unslaked lime and hot water. This will generate enough heat to kill the pathogenic organism.

Hemoptysis in Pulmonary Tuberculosis and Its Treatment

Dr. Elmer H. Funk, Philadelphia: Among 373 patients with advanced pulmonary tuberculosis in the department for diseases of the chest of the Jefferson Hospital, hemoptysis was present in 164, or 44 per cent. Among 167 patients traced to the end, hemoptysis was noted in ninety instances, 54 per cent. The extent of the lesion does not bear a direct relation to the occurrence of hemorrhage; it may be the first or last symptom of the disease. The frank hemorrhages early in the disease probably result from the rapidity with which the tuberculous lesion erodes the vessels before they become thrombosed and occluded, as ordinarily they do in advance of the lesion. Rupture of aneurysmal dilatation of vessels within the cavity or embedded in its wall is probably the important factor in the profuse hemorrhage late in the disease. We have grouped pulmonary hemorrhage under: (1) frank profuse hemorrhage; (2) small and mild hemorrhages; (3) persisting hemorrhages, and (4) blood-streaked sputum. The expectoration of blood-streaked sputum ought to be given as careful thought as the profuse frank hemorrhage. There is noted at times what might be called an epidemic of blood spitting in a group of consumptives, and we are at present conducting a series of observations in this connection. In the treatment of hemoptysis in pulmonary tuberculosis, individualization is the keynote of success. Rest is by far the most important therapeutic procedure. Diet depends largely on the severity of the hemoptytic attack. Drugs play a minor, though if judiciously used, an important part in the therapy of hemoptysis. We are inclined to the belief that emetin is of distinct value in hemoptysis in which there is a tendency to repeated small hemorrhages or in cases suggesting capillary bleeding. The use of drugs to lower general blood pressure and for their action on the pulmonary circulation has not availed us much. We have discarded the time-honored ice bag on the chest. In cases in which blood gushes from the mouth, ligatures should be placed around the extremities, exerting just sufficient pressure, however, to retard the venous return and not to obstruct the arterial inflow. When the bandage is removed it should be done gradually. Persistent bleeding which fails to respond to the usual methods calls for a consideration of the therapeutic use of artificial pneumothorax. It is of vital importance, particularly in protracted cases, to secure free movements of the bowel daily, provided positive contraindications are absent. Evacuation is best accomplished by the salines, and of these preferably by magnesium sulphate.

DISCUSSION

Dr. C. R. Phillips, Harrisburg: From our observations at State Tuberculosis Dispensary 13 from March 1, 1908, to March 1, 1915, in a series of 5,700 cases diagnosed as tuberculosis pulmonalis, we concluded that about as many persons die from tuberculosis without having had hemorrhages as those who have; that hemorrhages are as likely to occur early in the disease as late; and that dispensaries and sanatoriums reduce the frequency of hemorrhage. In only 21 per cent. of the cases did hemorrhage occur after coming under our care. Hemorrhage per se cannot be considered: it is only a part of a vast clinical and pathologic picture, the significance of which depends on the accompanying conditions.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

The President, Dr. Alfred L. Gray, Richmond, Va., in the Chair

Roentgenographic Diagnosis of Metastatic Malignancy in the Lung

Drs. A. B. Moore and R. D. Carman, Rochester, Minn.: We examined 71 positive cases; average age of patients, 45½ years; average time since primary growth was noticed, three years and three months. The distribution of the primary focus was: breast, 20 cases; thyroid, 8 cases; soft tissues of forearm, 11 cases; kidney, 5 cases; soft tissues of neck and face, 5 cases; uterus, esophagus, prostate and testicles, 2 cases each, and 1 case each in the hard palate, larynx, suprarenal and sigmoid. In 59 cases the pathologic report was: carcinoma, 40, and sarcoma, 16; hypernephroma, 3 cases. Fourteen patients showed metastases in other organs besides the lungs, the most frequent being the liver, bones and brain. In 42 cases the primary growth was removed, with 19 local recurrences. Cough was the most common symptom, being present in 32 of the 71 cases. Dyspnea was present in 30 cases; pain in 14 cases, and pleural effusion, 12 cases, the fluid being bloody in 10. Only 16 patients gave evidence of pulmonary trouble. Loss of weight was not a marked clinical feature, being very indefinite in most cases. The roentgenographic findings were very positive, the manifestations appearing as clear-cut circumscribed areas of increased density.

Pulmonary Tuberculosis

Dr. Kennon Dunham, Cincinnati: The abnormal densities in the linear markings found in tuberculosis of the lung are due to tubercles situated along the bronchial tree. These tubercles when quite small break into the bronchus, forming minute microscopic cavities, the bronchus being a natural drainage tube of these cavities. Thus the spread of tuberculosis is along the bronchial branches, and until large cavities are formed, the lesion is limited to this particular distribution by means of its natural drainage tube, and not by a fibrous wall, as has been stated. The subsequent spread of the lesion is not from one small branch to its neighbor, but it goes back and extends along another main trunk or bronchus, either an adjoining bronchus or one lower down.

Roentgen Findings in Pulmonary Tuberculosis

Dr. Frank S. Bissell, Minneapolis: The interwoven appearance of pulmonary striae, described by Dunham, is a characteristic sign of pulmonary tuberculosis. It was present in 63 consecutive cases in which a positive constitutional reaction to tuberculin was obtained. In 12 negative cases (tuberculin test) the network was absent in 10 and typical in 2. The total number of lung cases examined and not diagnosed clinically was 111. A Roentgen diagnosis of pulmonary tuberculosis was made in 64 cases, sustained by clinical diagnosis in 38, and partially sustained in 8 cases. Thirteen cases reacted to tuberculin; the diagnosis was made by animal inoculation in 1 case, and by necropsy in 2 cases; by finding the bacilli in the sputum in 5 cases; by physical signs considered positive in 17, and by physical signs considered doubtful in 8 cases. Eighteen cases were unsustained by final clinical diagnosis, with symptoms not explained by any diagnosis in 13 cases, and extensive fibrosis or evidence of an inactive process in 5 cases. The total number of cases not diagnosed as tuberculosis by the Roentgen ray was 47, one of which was later shown to be tuberculosis. In 46 cases the negative Roentgen diagnosis was sustained by the clinical diagnosis. Therefore, the Roentgen ray has given the term "early diagnosis" a new meaning.

DISCUSSION ON PAPERS OF DRS. MOORE AND CARMAN, DUNHAM AND BISSELL

Dr. W. F. Manges, Philadelphia: We should not expect to see small pulmonary lesions except with the aid of the stereoscope. Some clinicians are of the opinion that we cannot show these lesions. I think this is due to the fact that they have not seen some of this good work, because it has been shown conclusively that the Roentgen ray can detect these lesions sooner than can be done by clinical methods. Recently I saw a patient who had been advised to have an operation for gastric ulcer. I examined him roentgenographically and found his stomach normal. I made fluoroscopic plates of his chest, and found the apices of both lungs densely infiltrated with small dense spots showing everywhere, the pleura much thickened. I did not believe, however, that it was an active tuberculosis, but even at that it was worth while knowing that these lesions were there, and if I had not incidentally made the examination of the lungs a part of my examination, this evidence would have gone undetected. Dr. Moore's paper indicates the necessity for more careful routine examination in all cases. Cancer cases should be examined in this way before any operation is performed, in order to determine whether metastases are present, not only in the lungs, but elsewhere, because if there are metastases it is useless to operate for the primary carcinoma. If there are none present, it is well to know it for the sake of record, if the patient should return later with a recurrence.

Dr. George E. Pfahler, Philadelphia: The diagnosis of pulmonary carcinoma should receive more attention. It would be well for surgeons to examine every patient before operation, especially those who show evidence of glandular involvement. Several surgeons in Philadelphia make it a rule to send these patients to me for Roentgen examination. In many cases referred to me for postoperative treatment I have found evidence of pulmonary disease. The early signs of pulmonary carcinoma are very much like those of pulmonary tuberculosis. Sarcoma is entirely different. I have seen a number of cases in which I could not make a differentiation between carcinoma and tuberculosis. In many cases of carcinoma of the lung secondary to breast cancer, the lesions are more marked on the side of the primary tumor in the breast than on the opposite side. Of course, carcinoma elsewhere in the body may cause pulmonary metastasis. We must search carefully for those areas of increased density. Some of these cases are primary in the lung.

Dr. Russell H. Boggs, Pittsburgh: I have examined a few cases of pulmonary carcinoma in which the primary lesion is in the bone. I think most of these cases are of the scirrhous type of carcinoma.

Dr. P. M. Hickey, Detroit: I should like to call attention to one point in the diagnosis of carcinoma of the lung, and that is the tendency of the infiltrating lines to extend across the lower part of the right lung. That is due to the interlobar infiltration between the middle and lower lobes. The presence of these lines, when they are well defined, is suspicious of malignant disease. The first infiltration in cases secondary to carcinoma of the breast is in the pleura. At the necropsy little nodules are found in the parietal pleura, extending along in rows like drops of wax. They give very characteristic Roentgen shadows, which should be studied stereoscopically.

Dr. S. B. Childs, Denver: The early stages of pulmonary tuberculosis can be detected on the roentgenogram. The lesion shows in the form of areas of increased density around the root of the lung. These areas are so small that they cannot be detected by clinical examination.

Dr. H. W. Dachtler, Toledo, Ohio: The Wassermann test may explain some of these cases of râles all over the lung without evidence of tuberculosis. I have found that to be true in a number of cases. I always make roentgenograms of all patients operated on for carcinoma of the breast, and have found this to be of value in checking up later, when these patients return with a recurrence. As to the direction of travel of the infection: I always thought it was out along the peribronchial gland, but I am not so certain about that now. Infection usually follows the lymph stream, and I have seen cases in the last few years in which there were definite tubercles along the axillary region, with no evidence of infection in the hilus.

Dr. James T. Case, Battle Creek, Mich.: I have had a case in which the diagnosis of lung cancer was based on the presence of a single, small, rounded shadow, at the level of the nipple, the shadow resembling those pointed out by Dr. Moore. I made stereoscopic plates and they showed plainly that this was the nipple shadow. This might be a source of error. For several years I have made a stereoscopic chest examination of every patient about to be operated on for carcinoma of the chest, in order to be forewarned as to the presence of metastasis, and as a matter of record for future comparison, if a patient should return with symptoms suggesting metastatic involvement.

Dr. David R. Bowen, Philadelphia: A boy was operated on for sarcoma of the forearm. A recurrence was treated with the Roentgen ray, and the boy apparently recovered, although he remained in the hospital. He was the sort of individual who never failed to complain when he did not feel well, but this time he made absolutely no complaint, in spite of the fact that when we made a Roentgen examination of his chest we found a marked metastasis in the lung.

Fluoroscopic Bronchoscopy

Dr. George W. Grier, Pittsburgh: Fluoroscopic bronchoscopy is indicated only when the foreign body is located in the bronchus or other structure which is inaccessible to the bronchoscope. In such cases the extracting forceps can be projected beyond the end of the bronchoscope, grasping the foreign body and removing it under the direction of the fluoroscopist.

Intensive Deep Roentgen Therapy

Dr. George C. Johnson, Pittsburgh: This method is capable of producing rapid destruction of superficial malignancy without pain in from one to three sittings, even in such locations as the eyelid. Postoperative radiation should be carried out conscientiously over a wide area beyond the apparent limitations of the disease, and sufficient radiation must be employed to insure the complete sterilization of the tissues. Often the area treated is not sufficiently large, and many malignant cells lying in the tissues beyond the reach of the ray survive and the result is an early recurrence. Deep Roentgen therapy will also produce quickly and painlessly and safely an artificial menopause in various gynecologic conditions.

Roentgen Observations on the Duodenum

Dr. James T. Case, Battle Creek, Mich.: I saw one case of carcinoma of the duodenum at about the papilla of Vater. In two other cases a diagnosis of pancreatic tumor was made, differentiating it from gallbladder disease. I have seen four cases of true diverticula of the duodenum occurring in the pars inferior, and three cases of dilatation of the ampulla of Vater. One case was complicated by multiple diverticula of the colon, and in two cases there were multiple diverticula of the jejunum.

Treatment of Epithelioma

Dr. J. H. Edmonson, Birmingham, Ala.: In treating cutaneous malignant disease I begin with fulguration, cauterization or coagulation. This destroys the most superficial and a great number of the deeper cells. It renders the field immediately accessible to treatment, and it closes the metastatic channels. Following this I expose the neoplasm to the unfiltered ray, thoroughly protecting the neighboring tissues. The next day I repeat the treatment, including about one-half inch of the surrounding tissues. If there is any evidence of the growth after the reaction subsides, I repeat the treatment. If not, I give a light treatment only to destroy any cells that may have escaped.

Effect of Moderate Doses of Opium Derivatives on Gastro-Intestinal Tract

Dr. Henry K. Pancoast, Philadelphia: Observations were made on a series of eleven persons getting morphin and one heroin habitué. With one exception there was a decided lack of uniformity in the effects produced in different individuals. Small doses produced more marked effects than large doses. Females appeared to be more susceptible than males. In the stomach a rather high spasmodic hourglass contraction is observed rarely, but we have not seen it near the pylorus, as described by others. In some instances the stomach may show no appreciable change from the normal. In most cases there is more or less pyloric spasm, increased peristalsis, and a decided prolongation of the emptying time. In the small intestine, morphin causes decreased motility almost uniformly, apparently as a result of a lack of propulsion and not of spasm. When marked, it is most noticeable in the upper bowel. The effect on the large bowel is variable and probably of little consequence. Oral administration produces practically the same effect as subcutaneous injections.

(To be continued)

COLORADO STATE MEDICAL SOCIETY

Forty-Fifth Annual Meeting, held at Denver, Oct. 5-7, 1915

The President, Dr. George B. Packard, Denver, in the Chair

Five Cases of Relapsing Fever, Originating in Colorado

Dr. Charles N. Meader, Denver: We have had five patients and probably a sixth who have been ill with precisely the same train of symptoms. The outstanding features are, in brief, slight prodromal weakness and malaise; abrupt onset of fever accompanied by intense headache, chiefly occipital, with severe loin and leg ache; nausea or vomiting with constipation; marked prostration, and a high fever of 102.5 to 104.8 F. running a definite course of two or three days and ending by an abrupt crisis, the fall being accompanied by profuse sweating. There is, further, a recurrence of similar attacks to the number of three or four at rather definite intervals. Convalescence from the single attacks is rapid and is marred only by a slow return of muscular strength. The striking point on physical examination in the two cases seen during the height of the attacks has been a pulse which is weak out of all proportion to the apparent severity of the disease, due probably to a slight cardiac dilatation, with a moderately enlarged and tender liver and spleen. Of the laboratory findings, the appearance and disappearance of a considerable amount of albumin and large numbers of fine hyaline casts in the urine are strikingly rapid. The normal or diminished leukocyte count, accompanied by a fall in the proportion of polymorphonuclears and a rise in the transitionals during the attack, with a slightly increased white count, and a return to normal cell proportions in the intervals, is noteworthy. The feature of the blood examination, which is the criterion of diagnosis, is, of course, the demonstration of the spirochetes. This was accomplished in smears stained by the usual Wright stain in two cases. Spirochetes could never be found in the intervals between attacks. There seems, then, little room to doubt that these cases represent a small local outbreak of relapsing fever.

DISCUSSION

Dr. Henry Sewall, Denver: I see no reason why we should not have an endemic focus started in Colorado which would be very serious to the people whom we invite in the summer. The disease may become endemic, but by a very little precaution we can avoid that. Our health authorities should communicate with the central quarantine authorities. It is time for action.

Dr. William T. Councilman, Boston: These blood diseases can spread only through the medium of some agent which outside of the body conveys the parasites in the blood to some other person. We have a striking example of that in malaria. We must not only have the parasite which is the cause of the disease, but we must also have some other parasitic organism to convey the disease. So far, we have been very fortunate in regard to those diseases because the parasites which are within the blood have been brought to this country or from other countries where the two parasites are endemic. We have a blood parasite brought to us again and again, but so far we have been very fortunate in that the parasite which conveys the disease, either a tick or a louse or some other agent, has not, as a rule, found a suitable environment in this country. We have had striking examples of that in regard to sleeping sickness. Sleeping sickness was brought to this country by Africans, and they died in this country; but the disease was not recognized, and there was never occasion for the spread of the disease, because the fly, which was the necessary agent for the reproduction of the disease, was not brought to this country.

The Effects of High Altitudes on Cardiac Affections

Dr. A. Zederbaum, Denver: The heart is endowed with a wonderful recuperative power, and with an unexcelled faculty of adjusting itself to situations and circumstances. This adjustment is often given better facilities in high altitudes than in the lowlands. There are conditions of the heart which strongly contraindicate residence in a high altitude, but they are not many, and should be studied carefully in each individual case before a final judgment is pronounced.

DISCUSSION

Dr. G. Walter Holden, Denver: It has been my observation for the last seventeen years in Colorado that there is little or no change in the heart conditions in cases I have met in my special work with tuberculosis. The cases run practically the same course in this altitude as they do at sea level. If patients come out here early with an aortic stenosis, with pericardial or pleuritic adhesions, they are bound to have trouble. They have to be extremely quiet for a long time, and their exercise and muscular movements should be controlled. That applies to patients residing at sea level as well as to those living in Denver.

Dr. O. M. Gilbert, Boulder: Ordinarily, I say to people that about 98 per cent. of what you hear about the serious effects of high altitude on heart disease is simply imaginary, based on some preconceived notions, and the other 2 per cent. is real; but one of those realities may be a mitral stenosis.

Dr. A. S. Taussig, Denver: If a patient has a moderately good heart muscle, regardless of the character of the lesion, we are safe in saying that that patient can come to a high altitude and be benefited thereby. Physicians in the East are not able to form a proper idea of the influence of high altitude on account of two things: first, from a lack of personal experience and, second, from their own negligence in sending patients to a lower altitude after they find seriously damaged hearts. I do not believe any practitioner in the East can obtain an adequate idea of what high altitude will do in cardiac cases.

Immunity in Tuberculosis

Dr. Gerald B. Webb and Dr. G. Burton Gilbert, Colorado Springs: Experimenting for some years with minimum lethal doses of tubercle bacilli, we find that virulent cultures probably vary somewhat, but in general ten bacilli inoculated subcutaneously will produce tuberculous disease in guinea-pigs. We have not yet found any safe method of injecting a single minimum lethal dose to produce infection in guinea-pigs without producing a spreading infection in these animals. We have injected these doses with immune blood platelets, with immune lymphocytes and with immune serum, yet infection has resulted in many cases. We have excised the local lesions early, and we have caused local lesions in strips of skin anchored only at one end to the guinea-pig, but too frequently we have found disease has spread beyond to neighboring lymph nodes. We have succeeded in producing safely some immunity to tuberculosis when we have inoculated very small numbers of tubercle bacilli of moderate virulence, gradually increasing these numbers. With the most virulent cultures, however, even this cannot be achieved, as infection will take place. We are at present attempting to isolate a culture of tubercle bacilli which will be virulent enough in these small progressive numbers to produce immunity in guinea-pigs without producing infection.

Tuberculosis of the Kidney

Dr. Oliver Lyons, Denver: Evidence obtained by palpation should be accepted with caution. For example, a diminution in the size of the kidney, due to cicatricial contraction subsequent to caseation, may lead the physician into error, particularly if the healthy kidney has undergone compensatory hypertrophy. The patient may or may not present the general character of tuberculosis elsewhere in the body. In the average case anemia, wasting and cachexia are not observed for many months or even years. Sweating, chills and fever are signs of secondary infection, and are due to the absorption of toxins after suppurative processes have begun. In this case the loss of weight, appetite and strength may be very marked. The main reason for the failure of early recognition of renal tuberculosis lies in the fact that we are not on the outlook for it.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Albany (N. Y.) Medical Annals

October, XXXVI, No. 10, pp. 467-516

1 Problems of Public Health Education. C. E. A. Winslow, New York.
2 Public Health Nursing as Community Service. K. B. Whitmore, Albany.
3 Id. E. P. Crandall.
4 *Form of Reflexes in Chorea; Technic of Elicitation; Studies in Neurologic Technic No. 4. W. B. Swift, Boston.

4. **Form Reflexes in Chorea.**—Swift urges that the form of the reflex in chorea calls for four precautions in elicitation. *A.* The relation of the reflex to the choreic contraction demands a number of trials. *B.* The less frequency found in the milder forms demands that in mild cases more trials are necessary, and in severe cases less trials, usually ten trials, rarely twenty-five or fifty. *C.* As a choreic contraction has more time to occur in a reflex describing a large arc, choose reflexes with long pendulums, as the knee-jerk and triceps. *D.* As choreic contractions increase their frequency with efforts to control them, precede each test with the instruction to "hold still." In a word, Swift would make numerous trials, the more the milder the case, on reflexes with long swings, knee-jerk and triceps and precede each test with the order to "hold still." Then watch for the form of the reflex response, which a choreic contraction may turn into a jerk, a flop, or a wabble.

Archives of Pediatrics, New York

September, XXXII, No. 9, pp. 641-720

5 *Cubic Air Space for Institutional Bottle-Fed Infants. T. S. Southworth, New York.
6 *Prophylactic Vaccination for Varicella. S. Rabinoff, New York.
7 Physical Examination of Heart in Children. J. E. Talley, Philadelphia.
8 *Birth Fractures of Humerus from Wards of New York Lying-In Hospital. E. D. Truesdell, New York.
9 Modern Children's Pavilion (Abraham Jacobi Division for Children of German Hospital, New York). A. L. Goodman, New York.

5. **Cubic Air Space for Institutional Infants.**—In the hope of securing some definite data of value and authority on this subject Southworth sent a questionnaire to each member of the American Pediatric Society. Thirty-three answers containing sufficient data to incorporate were received from pediatricians who reported on forty-nine hospitals and institutions containing infants. The majority (twenty-one in number) of the hospitals and institutional wards for infants from which reports of cubic air space were received provide 1,000 cubic feet and upward of air space for each inmate, and only five reported 600 cubic feet or less. Even with 1,000 or more cubic feet of air space, free ventilation is deemed highly important, and as the space decreases such free ventilation becomes more and more imperative. No allowance of cubic air space is at present made for the necessary attendants in wards. Reduced cubic air space means less square feet of floor space and less separation between cribs, with proportionately increased opportunity for the spread of cross infections. There is a growing belief that even with free ventilation separation of the beds plays as important a rôle as cubic space. Such adequate separation, however, is only attainable with large cubic air space. The majority of pediatric physicians believe that infants should have as much cubic air space as adults, if not more, and this is especially true of bottle-fed infants, because they are more susceptible to infection, suffer in their nutrition in confinement, and notoriously do badly in all except the best equipped institutions. Even with a liberal allowance of cubic air space free and abundant ventilation is of equal importance. In addition, provision for roof-gardens, porches and sun parlors is advisable, if not imperative. The mere presence of windows does not of itself constitute ventilation but their proper use must be provided for. A low minimum of cubic space established by law, without definition of what constitutes efficient ventilation, and without enforcement, Southworth believes may be more harmful than beneficial, and constitute a virtual license to overcrowd in ill-ventilated wards.

6. **Prophylactic Vaccination for Varicella.**—During an epidemic of varicella in the wards of the Hebrew Infant Asylum during the winter just passed, Rabinoff tried out prophylactic vaccination. In the majority of instances it was necessary to use material directly and immediately from either the vesicles or the pustules. The method used was similar to that of Kling, except that instead of multiple punctures small scarifications were made on the arm to be vaccinated. In none of the vaccinated cases was there any evidences of systemic disturbance. Among 142 susceptible children, 114, or about 75 per cent., developed varicella. In the group of seventy-six vaccinated children there were only six cases, or about 8 per cent. of the total number. Of these six cases, two developed on the day following vaccination, two seven days later, one nine days and the last ten days later. In other words, all the cases among the vaccinated children developed within the incubation period of the disease, which is about sixteen days. Rabinoff is convinced that in this epidemic the vaccinations undoubtedly limited the spread of the disease.

8. **Birth Fractures of Humerus.**—Twenty-four fractures in twenty-one infants were collected by Truesdell. All have been followed to their final outcome, roentgenograms and clinical examinations having been made at intervals in each case until this had been determined. In a few cases the deformity was extreme; in every case there was some. In no case has the roentgenogram failed to show a uniformly progressive elimination of the deformity. Of the twenty-four fractures, seventeen occurred during version with breech extraction, four during simple breech extraction, and three in vertex presentations, difficulty having been experienced in extracting the anterior arm, either because of narrowing of the pelvic outlet, or of the size of the child. In three cases the fractures were double, and of the twenty-one infants, seventeen survived. In all cases but one the line of fracture was practically transverse, a typical pipestem fracture, the site of fracture being at or near the center of the shaft of the bone, just below the insertion of the deltoid muscle. In one case, a shoulder presentation, a fillet had been applied to the prolapsed arm and traction maintained on this during the version, causing some twisting or torsion of the extremity. In this one instance the line of fracture was oblique.

The prevailing deformity was an external angulation attributable directly to the action of the deltoid, and quite excessive in a few cases. A second variety of deformity was a lateral displacement, the fragments lying parallel, but more or less separated. Overriding of the fragments was not noted in any case, nor was displacement in an anteroposterior direction. Each fracture was accompanied by a well marked wrist-drop, due to some injury to the musculospiral nerve at the time of fracture, since the paralysis was immediate and so not likely due to accumulation of extravasated blood or callus inclusion. The paralysis gradually disappeared during the first three or four weeks in the majority of the cases, and in none was evidence of it observed after the end of the sixth week. In one case the fracture was complicated by an Erb's birth palsy of the same arm. The repair of the fracture was as prompt in this as in the other cases, the bone finally uniting with a moderate degree of external angulation. The treatment of these fractures varied from time to time. A V-shaped splint cut from thin wood, deeply crotched at one end to fit the axilla, and applied to the inner side of the arm and flexed forearm, was employed, with good results.

Boston Medical and Surgical Journal

October 14, CLXXIII, No. 16, pp. 565-602

10 *Analysis of Three Hundred and Eight Cases of Typhoid in Children. K. G. Percy, Boston.
11 Therapeutic Value of Occupation for Insane. E. L. Haines, Boston.
12 Teaching of Applied Therapeutics at Tufts Medical School. F. H. McCrudden, Boston.

13 Workmen's Compensation Act and Physician. H. J. Cronin, Cambridge.
14 *Method of Testing Gastric Secretion by Use of Self-Closing Dredge. A. M. Burgess, Providence, R. I.
15 Sunshine; Its Neglected Analgesic-Sedative Action. J. Bryant, Boston.
16 Neuroma of Ulnar Nerve; Analysis of Case. J. B. Ayer, Boston.

10. **Typhoid in Children.**—In compiling these statistics Percy procured percentages from the total number of records which mentioned the point desired. Fever was noted in the histories in 82 per cent. Headache was a marked symptom in 57 per cent. Malaise was present in but 38 per cent. Vomiting occurred as a definite symptom in 26 per cent. Twenty-five per cent. of all patients gave a history of abdominal pain. Diarrhea is mentioned but sixty-two times, 21 per cent. Nosebleed occurred in 17 per cent. of this series, and of those, 78 per cent. within the first week of the disease. Constipation was a common symptom. Cough was noted in 8 per cent. Percy obtained a record of positive family history in sixty-six, or 23.7 per cent., while 76.6 per cent. gave no known contagion. The spleen showed enlargement to palpation on entrance in 68 per cent. of cases and was noted as enlarged to palpation in 79 per cent. of all cases some time during their stay in the hospital. Rose spots were noted ninety-four times in 280 careful records, or 33 per cent. at entrance and a total of 57 per cent. sometime during the course of the disease.

Widal's test was done on 280 patients of this series. On admission 80 per cent. were positive; 13.2 per cent. more were positive during their stay; 7.8 per cent. were negative. White blood cell count was done in 258 patients at or within three days of admission. Of these 14 per cent. were below 5,000; 57 per cent. were between 5,000 and 10,000; 29 per cent. were between 10,000 and 15,000. Fifty-one cases, or 67 per cent., either at entrance or within the first ten days gave positive diazo reactions. Blood cultures were done in seventeen cases only of this series. Twelve cases, or 70 per cent., were positive. Relapses occurred in sixty cases of 300 records in which the patients stayed in the hospital until discharged well, or in 18 per cent. of this series. Five patients had two relapses. Hemorrhages of the intestines occurred in four patients one of whom died and another of whom had as the apparent etiology a severe purpura with hematuria. There were no cases of perforation of the bowel. Complications were noted in 102 cases, or one third of this series. This series shows a mortality of 2.9 per cent. in 306 cases.

14. **Testing Gastric Secretion by Use of Self-Closing Dredge.**—Burgess' method consists of the use of a capsule, which is so constructed that it automatically closes as it leaves the stomach, and thus protects its contents from contamination.

Bulletin of Johns Hopkins Hospital, Baltimore

October, XXVI, No. 296, pp. 341-366

17 Important Contributions to Clinical Medicine During Past Thirty Years from Study of Human Blood Pressure. T. C. Janeway, Baltimore.
18 Elusive Mobility of Breast in Case of Retromammary Cyst. W. S. Halsted, Baltimore.
19 *Case of Foot-and-Mouth Disease in Man. P. W. Clough, Baltimore.
20 Method for Study of Morphology and Reproduction in Filamentous Organisms. T. R. Boggs and M. C. Pincoffs, Baltimore.
21 Study of Ferments and Antiferments of Body and Their Relation to Certain Diseases. J. W. Jobling and W. F. Petersen, Nashville, Tenn.
22 Antagonism Between Lactic-Acid and Spore-Bearing Organisms in Milk. W. S. Kiester, Baltimore.

19. **Foot-and-Mouth Disease in Man.**—The clinical picture presented by Clough's patient was that of a mild febrile infectious disease, characterized by the appearance of an erythema and a superficial vesicular eruption over the mucous membrane of the mouth and on the skin of the hands and feet; by salivation; by swelling, burning and parasthesias of the affected parts, with subsequent desquamation; and by healing of the ulcers without scar formation. The disease was present at the time in cattle in the neighborhood of Baltimore, and infection by means of milk or cream was possible, though it could not be demonstrated. Experimental proof of the nature of the disease by animal inoculation could not be obtained. Nevertheless the clinical picture was so characteristic that the diagnosis seemed reasonably certain. Treatment consisted of mouth washes of potassium chlorate and permanganate, and the application of skin lotions to relieve the itching. On the seventh day some of the exudate scraped from the vesicles in the mouth was inoculated into the mouth of a young dog after scarification of the mucous membrane. No lesion developed.

California State Journal of Medicine, San Francisco

October, XIII, No. 10, pp. 375-414

23 Nerve Injuries; Their Influence on Period of Disability. T. G. Inman, San Francisco.
24 Relation of So-Called Strained Back to Disability Following Industrial Accidents. S. Hyman, San Francisco.
25 Traumatic Neuroses in Relation to Industrial Accidents; Prognosis and Treatment. W. F. Schaller, San Francisco.
26 Some Remarks on Industrial Insurance Work. M. E. Rumwell, San Francisco.
27 Internal Medicine in Relation to Industrial Accidents. R. Bine, San Francisco.
28 Fracture Records; National Effort Toward Standardization. T. W. Huntington, San Francisco.
29 Use of Carbon Dioxid in Dermatology. E. D. Lovejoy, Los Angeles.
30 *Relation of Certain Urinary Findings to Prognosis on Pulmonary Tuberculosis. J. C. Cummings, Sacramento.
31 Infection; Its Prevention and Treatment. Results in Five Hundred Traumatic Cases. C. Dederer, Los Angeles.
32 Scope and Limitations of Psychiatric Clinic in San Francisco. E. C. Reid, San Francisco.
33 Pulsating Exophthalmos Treated by Slow Occlusion of Common Carotid Artery with Neff Clamp. S. D. Brazeau, Spokane.

30. **Relation of Urinary Findings to Pulmonary Tuberculosis.**—The pavilion for tuberculous patients at the Sacramento County Hospital has an average of from twenty to thirty inmates, nearly all of whom have advanced lesions. This group seemed to offer a good opportunity for checking up the urochromogen and diazo tests clinically and not infrequently pathologically as well. During his service Cummings examined 100 patients. In making the so-called urochromogen test the technic of Weiss was used. In 100 successive admissions of patients suffering from pulmonary tuberculosis only fourteen could be given a favorable clinical prognosis. In no case considered as "favorable" from a clinical standpoint did the so-called urochromogen reaction appear in the urine. In seven of the fourteen cases (50 per cent.) clinically considered "favorable" a positive diazo reaction was obtained. In thirty-nine of eighty-six (45 per cent.) clinically unfavorable cases the urochromogen test was positive while in fifty-three (61 per cent.) the diazo test was positive. Seventeen of 100 patients died in six months. Of these seventeen, eleven (65 per cent.) showed a positive urochromogen, and thirteen (76 per cent.) a positive diazo while ten (59 per cent.) showed both. Of seventeen patients showing a positive urochromogen test with a negative diazo (a combination considered especially ill-omened by Weiss) none has died to date. Of thirty-nine patients having a negative urochromogen and a positive diazo, five have died.

Cleveland Medical Journal

August, XIV, No. 8, pp. 533-580

34 Cases of Hemorrhagic Conditions in Infants. J. Phillips, Cleveland.
35 Treatment of Syphilis of Central Nervous System. O. P. Bigelow, Cleveland.
36 J. W. Mueller, on Transfusion — Retrospect. T. Sollmann, Cleveland.
37 Clinical Experience with Capsicum, Potassium Bitartrate and Terebene. H. F. Biggar, Cleveland.

Delaware State Medical Journal

August, VI, No. 9, pp. 1-32

38 Some Clinical Suggestions from Recent Work on Carbohydrate Metabolism. L. Hamman, Baltimore.
39 Elementary Electrotherapeutics. M. Marshal, Jr., Milford.
40 Static Electricity. H. J. Stubbs, Wilmington.
41 Wayside Notes on Tuberculosis. A. Robin, Wilmington.
42 Dietetic and Medicinal Treatment of Eczema in Children. D. Rossman, Wilmington.
43 Iritis and Cyclitis; Report of Case of Metastatic Gonorrheal Kerato-Iritis. W. O. LaMotte, Wilmington.

Georgia Medical Association Journal, Augusta

October, V, No. 6, pp. 127-148

44 Gonococcemia. W. L. Champion, Atlanta.
45 *Second Infection of Syphilis; Wax in Bladder Causing Stones. T. E. Blackshear, Macon.
46 Small Fibrous Prostate. A. L. Fowler, Atlanta.
47 Improved Method of Draining Bladder after Prostatectomy. G. E. Ballenger and O. F. Elder, Atlanta.
48 Papilloma of Bladder; Report of Two Cases. M. L. Boyd, Atlanta.
49 Unique Case in Gunshot Wounds. J. G. Standifer, Blakely.

45. **Second Infection of Syphilis.**—September, 1914, Blackshear's patient consulted him for a sore on the penis. This proved to be a chancroid, which healed up promptly under local treatment. Blackshear saw him again three months later. He then presented a typical sore of ten days' duration. Period of incubation uncertain, owing to various exposures. This lesion on examination by dark field illumination, showed the presence of *Spirochaeta pallida*, and the diagnosis of syphilis was made. He had a moderate degree of inguinal adenitis. The patient stated that he had contracted syphilis three years before; had been given three intravenous injections of salvarsan. At that time he presented a typical case of syphilis, stiff joints, swollen glands, headache, throat symptoms and a beautiful eruption.

Journal of Cutaneous Diseases, New York

October, XXXIII, No. 10, pp. 667-730

50 *Pemphigoid Eruptions Following Vaccination. W. H. Mook, St. Louis.
51 Primary Syphilis of Tonsil. C. M. Smith, Boston.
52 Trichloracetic Acid and Its Uses in Dermatology. C. N. Davis, *Philadelphia.*
53 Tuberculosis of Tongue. W. Blancard, New York.

50. **Pemphigoid Eruptions.**—The cases in Mook's report were all primary vaccinations. The lesions showed a predilection for certain areas, localizing around the mouth, neck, extremities, and especially the joints. He states that the pemphigoid variety may appear as small vesicles, resembling chickenpox and smallpox, or as papulovesicles, and may become pustular. The bullae are usually clear and tense on normal skin, though they may be on inflamed and eczematoid areas of great variety in sizes, forms and configurations in the same individual. Hemorrhagic bullae are frequent. Circinate and concentric rings of bullae are marked features. In some cases the central bulla is hemorrhagic, with concentric, serous vesicles and bullae and not necessarily intercommunicating. Others have a tendency to the production of large, gyrate patches of peculiar inflammatory areas, resembling mostly eczematoid dermatitis. The period of incubation may vary from three to four days to four months. A majority of the cases vary from three to five weeks. The benign cases are manifested by smaller bullae. Mouth lesions may or may not be present, and there may be slight or severe febrile disturbance. They may terminate in complete, uncomplicated recovery in a few weeks, or recur as a vesicular or bullous eruption, in crops, over a period of years as a true or pseudodermatitis herpetiformis. The vegetating and scar-forming varieties are fortunately rare. All of the cases have a rise of temperature at the onset or during the course of the disease.

Inoculation experiments were negative in two monkeys, a calf, several guinea-pigs and rabbits. Blood cultures from a fatal case and two recovered cases were negative under aerobic and anaerobic conditions, on agar and blood serum medium. Numerous cultures from various bullous lesions yielded ordinary staphylococci and some of them were sterile. Smears from one case showed diplococci, but the culture from this case showed staphylococci and the guinea-pig inoculated was negative. A mild or marked leukocytosis occurred early in all of the cases, continuing in two of the fatal ones and disappearing in those recovering or having a tendency to relapse. The eosinophilia appeared in the later stages, though it was not constant. The disease begins as a primary lesion, namely, the vaccination, followed by mild or severe constitutional involvement, with a multiformity of lesions involving the skin and mucous membrane, and running a short, acute, or chronic course sometimes over a period of years, and in many is fatal.

Kentucky Medical Journal, Bowling Green

September, XIII, No. 10, pp. 405-470

54 Bilateral Dermoid Cysts of Ovary. A. H. Barkley and H. G. Herring, Lexington.
55 Management of Interrupted Pregnancy. J. L. Atkinson, Campbellsville.
56 Eclampsia. C. T. Thomas, Lebanon Junction.
57 Complete and Incomplete Tonsillectomy. J. H. Hester, Louisville.
58 Physician's Faith in God. J. W. Crenshaw, Cadiz.
59 Dysentery of Ileocolitis. E. T. Riley, Trenton.
60 Inversion of Uterus; Report of Case. G. C. Rankin, Walton.
61 Pyloric Obstruction. W. A. Bryan, Nashville.
62 Skin Grafting; Report of Cases. W. Bach, Jackson.
63 Pertussis Vaccine as Prophylaxis; Report of Its Use as Such. S. C. Frankel, Louisville.
64 Some Practical Considerations in Regard to Eugenics. C. Pope, Louisville.
65 Acute Dysentery in Adult. T. E. Craig, Colesburg.
66 Typhoid. J. V. Stark, Kirksey.

Medical Record, New York

October 16, LXXXVIII, No. 16, pp. 639-680

67 Fluoroscopic Screen and Roentgenogram Plate in Diagnosis of Medical and Surgical Lesions of Alimentary Tract. C. W. Perkins, New York.
68 Excision of Fistulous Tract in Treatment of Fistula in Ano. C. Savini, New York.
69 *Treatment of Typhoid with Typhoid Vaccine Administered Intravenously. H. I. McWilliams, New York.
70 Syphilis of Lung; Report of Case. M. T. Easton, Peoria, Ill.
71 Maternal Instinct Factor in Prenatal Development of Epileptic Type of Nervous Constitution. R. G. MacRobert, New York.
72 Sustained Failure in Problem of Tuberculosis. M. E. Lapham, Highlands, N. C.

69. **Typhoid Treated with Typhoid Vaccine.**—A review of the literature by McWilliams shows that more than 550 cases treated in this manner have been reported in the literature. In more than half of these cases the disease was cut short, the patient having been saved from one to several weeks of fever. McWilliams believes that a few deaths must undoubtedly be attributed directly to the injections of vaccine. However, this is likely to occur with any new and radical method of treatment. As the contraindications and dosage are better understood, such deaths should become extremely rare. No one type of vaccine seems to possess any great superiority over other types with regard to treatment. The proper dosage for intravenous injections appears to be from 100 to 250 million bacilli. The injection of the vaccine calls forth first a marked leukopenia and several hours later a high-grade leukocytosis in typhoid patients. Variations in the number of polynuclear leukocytes are responsible for these changes, the lymphocytes remaining relatively constant. The eosinophil cells undergo an increase shortly after the injection. The various types of vaccine call forth similar changes in the blood picture.

Missouri State Medical Association Journal, St. Louis

October, XII, No. 10, pp. 433-474

73 Discrimination in Use of Methods to Produce Surgical Anesthesia. E. Fischel, St. Louis.
74 Hodgkin's Disease. G. Ives, St. Louis.
75 Progress in Obstetrics for 1914. F. T. Van Eman, Kansas City.
76 *Factors of Safety in Goiter Operations. V. P. Blair, St. Louis.
77 Surgery of Goiter. R. Hill, St. Louis.
78 Byways of Medicine. E. C. Wittwer, *Mountain Grove.*
79 Organization of National and Local Forces in Campaign against Cancer. C. E. Lakeman, New York.
80 *Lobar Pneumonia. O. Putman, Marceline.

76 and 80. Abstracted in THE JOURNAL, June 26, pp. 2160 and 2161.

New York Medical Journal

October 16, CII, No. 16, pp. 785-832

81 Rectal Fistula. J. R. Pennington, Chicago.
82 Exciting of Cardiac Reflex in Treatment of Enlargement of Heart and Aorta. M. Solis-Cohen, Philadelphia.
83 Acid Autointoxication Accompanying Hyperemesis of Pregnancy; Report of Case. E. E. Cornwall, New York.
84 New Growths of Prostatic Urethra in Relation to Tuberculosis: Report of Cases. P. S. Pelouze, Philadelphia.
85 Identity of Peculiar Traits and Neuroses. A. Stern, New York.

86 Creatinin as Test for Renal Function. A. K. Detwiler and M. L. Griffith, Omaha.
87 Pituitary Disease. W. Timme, New York.
88 Some Uses for Xylol in Dermatology. J. E. Lane, New Haven, Conn.
89 Obesity and Its Treatment. F. A. Cummings, Providence, R. I.
90 Schick Test. J. Zuckerman, New York.

Ohio State Medical Journal, Columbus

September, XI, No. 9, pp. 549-604

91 Thymus Gland. G. Dock, St. Louis.
92 Some Newer Conceptions of Surgery of Stomach and Duodenum. G. W. Crile, Cleveland.
93 Treatment of Enuresis by Psychotherapy. W. Ravine, Cincinnati.
94 Some Etiologic Factors in Connection with Contraction of Syphilis. H. N. Cole, Cleveland.
95 Case of Mastoiditis with Complications and Discussion of Value of Blood Cultures in Aiding Diagnosis. F. W. Alter, Toledo.
96 Should Public Schools be Closed when Epidemic Develops? F. G. Boudreau, Columbus.
97 Intra-Abdominal Injury from Slight Trauma. F. C. Herrick, Cleveland.

South Carolina Medical Association Journal, Anderson

September, XI, No. 9, pp. 271-303

98 Diagnosis of Incipient Tuberculosis. N. B. Edgerton, Columbia.
99 Consideration of Pericolic Membranes; Report of Seven Cases. J. H. Taylor, Columbia.
100 Modern Hospital Laboratory. T. R. N. Wilson, Greenville.
101 Bogie of Intestinal Autointoxication. G. M. Niles, Atlanta, Ga.

Southern Medical Journal, Mobile, Ala.

October, VIII, No. 10, pp. 833-920

102 Importance of Vital Statistics Legislation in South. W. J. Harris, Washington, D. C.
103 How Virginia Secured Place in Registration Area. W. A. Plecker, Richmond, Va.
104 Vital Statistics — Basic Principles of Organization. F. L. Watkins, Jackson, Miss.
105 Preparation Necessary for Putting into Operation Vital Statistics Law. H. H. Shoulders, Nashville, Tenn.
106 Prenatal Responsibility of Parents for Children. M. M. Carrick, Dallas, Texas.
107 Lumbar Puncture in Diagnosis and Treatment. F. H. Smith, Abingdon, Va.
108 Antitubercle Serum as Aid in Treatment of Tuberculosis. T. J. West, Makaweli, Kauai, Hawaii.
109 Technic of Cystoscopy in Women. M. J. Gelpi, New Orleans.
110 Trephining for Relief of Increased Pressure of Cerebrospinal Fluid. R. M. Harbin, Rome, Ga.
111 Operative Treatment of Closed Fractures of Patella. C. M. Remsen, Atlanta, Ga.
112 *Splenectomy in Pernicious Anemia; Report of Case. C. A. Penrose, Baltimore.
113 New Technic in Administering Salvarsan. J. H. Carter, Memphis, Tenn.
114 Gasoline, Iodin and Alcohol in Surgery. J. W. Alsobrook, Plant City, Fla.
115 Impacted Watermelon Seeds in Rectum. C. E. Marlette, Hayneville.
116 *Amyl Nitrite in Chloroform Poisoning. J. S. Gilman, C. J. Devine and T. M. Barber, Richmond, Va.
117 Arthritis Associated with Infections of Nose and Throat. J. Bordley, Baltimore.
118 Vernal Conjunctivitis in Negro. D. Roy, Atlanta, Ga.
119 Straight, Direct Laryngoscopy and Esophagoscopy; Report of Cases. R. H. Johnston, Baltimore.

112. **Splenectomy in Pernicious Anemia.**—A review of the literature has convinced Penrose that splenectomy is of unquestionable service in selected cases of pernicious anemia. In his case while the enlargement of the spleen was a most favorable indication for operation, the lack of regenerative forms in the blood made him dubious. The fact that this patient had put forth all his power for recuperation a year before was also against him. At that time a splenectomy would possibly have been of greater value. In all cases, Penrose says, it would seem wiser to perform, as was done in this case, a transfusion of blood, from a carefully selected donor, at the time of the operation. In this patient there was practically no surgical shock, and in all probability, while the splenectomy did not save him, his life was somewhat prolonged by the transfusion.

116. **Amyl Nitrite in Chloroform Poisoning.**—The results obtained by the authors indicate that the inhalation of amyl nitrite definitely increased the dose of the chloroform solution required to cause the death of the animals.

Surgery, Gynecology and Obstetrics, Chicago

October, XXI, No. 4, pp. 403-540

120 *Symposium on Renal Infections. Errors in Diagnosis of Renal and Ureteral Calculus. H. Cabot, Boston.
121 *Postoperative Renal Infection. G. G. Ward, Jr., New York.
122 Renal Pain; Diagnostic and Clinical Significance. J. B. Squier, New York.
123 *Bladder Function after Confinement and after Gynecologic Operations. F. J. Taussig, St. Louis.
124 *Laboratory Diagnosis of Chronic Infections of Urinary Tract in Women. A. H. Curtis, Chicago.
125 Errors in Diagnosis of Renal Infections. A. L. Chute, Boston.
126 *Shock and Hemorrhage; Experimental Study. F. C. Mann, Rochester, Minn.
127 Left-Sided Appendicitis; Report of Case and Classification of Literature. J. H. Schrup, Dubuque, Ia.
128 Congenital Intestinal Anomalies. M. G. Sturgis, Seattle.
129 *Fibrin as Hemostatic in Cerebral Surgery. E. G. Grey, Boston.
130 Essential Uterine Hemorrhage. S. H. Geist, New York.
131 *Abderhalden Reaction in Malignant Tumors, Pregnancy and Angiosclerosis. C. Goodman and S. Berkowitz, New York.
132 Study of Irregular Kidney Vessels as Found in One Hundred and Eighteen Cadavers. R. R. Rupert, Chicago.
133 *Treatment of Hand Infections from Economic Viewpoint. H. E. Mock, Chicago.
134 *Hysterical Joint Neuroses. C. W. Rand, Chicago.
135 Carcinoma of Rectum. L. L. McArthur, Chicago.
136 Mortality and Prognosis in Operative Treatment of Cancer of Rectum. C. B. Davis, Chicago.
137 End-Results of Series of Three Hundred Operations on Gallbladder. J. J. Buchanan, Pittsburgh.
138 Gonorrheal Ureteropyelitis; Report of Two Cases Treated by Injections of Antimeningitic Serum. M. L. Boyd, Atlanta, Ga.
139 Rectovesical and Enterovesical Fistula. J. H. Cunningham, Jr., Boston.
140 Duodenojejunostomy with Exclusion of Uppermost Jejunal Loop for Angioma of Duodenojejunal Junction and Upper Jejunum. E. Beer, New York.
141 Simple and Satisfactory Closed Ether Apparatus. L. G. Bowers, Dayton, Ohio, and L. F. Ross, Richmond, Ind.
142 Technic and Experimental Application of Hard Rays for Deep Roentgenotherapy. L. G. Cole, New York.
143 Case of Intersigmoid Retroperitoneal Hernia. J. C. Black, Regina, Saskatchewan.
144 *Intra-Abdominal Use of Oxygen. G. K. Collier, Sonyea, N. Y.

120. **Errors in Diagnosis of Renal Calculus.**—The following rules for avoiding errors are laid down by Cabot: In all cases of abdominal pain of a chronic or recurring type, in cases of backache, lumbar or sacro-iliac joint strain and lumbago, careful repeated examinations of the urine, including a microscopic examination of the sediment in all cases whether albumin is present or not, and of a catheter specimen in all female patients, should precede positive diagnosis. In most of these cases in which the symptoms warrant the consideration of operation, roentgenograms are essential. The evidence presented by the Roentgen ray alone is insufficient to warrant operation in most cases of stone in the kidney or ureter. Possibility of error by mistaking other foreign bodies should be excluded by the use of the ureter catheter, stereoscopic plates, injected roentgenogram, or the wax-tipped catheter. In any case in which the symptoms suggest ureteral calculus and a doubtful shadow appears in the roentgenogram, if the ureter cannot be catheterized on repeated attempts or the catheter is arrested at the same point on various occasions, the decision for or against operation must be made on the apparent gravity of the symptoms. In cases with symptoms suggesting stone in the kidney, with a normal urine, a negative roentgenogram and an unobstructed ureter, the wax-tipped catheter will not infrequently lead to a correct diagnosis and will be likely to fail only in the cases in which the stone lies in a dilated calix and is therefore out of reach of the catheter.

121. **Postoperative Renal Infection.**—Ward believes that postoperative renal infection is more frequent than has been formerly appreciated, owing to the fact that in many cases it is overlooked on account of the mild character of the infection, the severe types being comparatively rare. Vesical irritability occurring after operation may be an important precursory sign of renal infection, and therefore should not necessarily be attributed to a cystitis caused by carelessness. Ward says that a study of the urine will show the probable type of the disease present, and thus be a guide to the treatment. He advises that a careful study of the pathologic con-

dition of the kidney should be made at the operation in order that nephrectomy may be avoided if possible.

123. **Bladder Function After Confinement.**—While there are all gradations of deficiency in bladder function after confinement and operation, Taussig says, that for practical purposes patients may be divided into four groups: 1. Those who show at such times no appreciable change from normal micturition. Those who, although able to void spontaneously, do not for a day or two empty their bladder completely. Those who require catheterization one or more times in the first few days, but are then able to void without further trouble. Those with prolonged interference of bladder function. The character and duration of the operation or labor, the form and amount of the anesthetic, the age of the patient, the nervousness of the individual and the degree of sensitiveness of her bladder mucosa, are all factors that to a greater or less degree come into play in introducing urine retention; and the object should be to regulate the therapy so far as possible in accordance with the probable factors in each case.

124. **Laboratory Diagnosis of Chronic Renal Infections.**—Curtis advises that the source of even small amounts of pus in the urine should be investigated. He believes that persistent pyuria in the absence of a gross bladder lesion is almost invariably due to kidney disease. In those frequent cases with bladder irritability which yield clear, bacteria-free urine, cultures from the traumatized urethral canal, or from introduction of a probe into Skene's ducts, may demonstrate the cause of infection. When bacteria are widely scattered or grow with difficulty, a mixture of the urinary sediment with blood followed by the making of a large number of ascites-blood-agar tubes of high dilution, results in conditions favorable for the development and isolation of the bacteria present. The chief lesions in urinary tuberculosis are usually renal. In obscure cases, laboratory diagnosis is facilitated by potassium iodid, tuberculin, kidney massage, limitation of liquids, repeated examinations of fresh specimens after high power centrifugation, Petroff's cultures, and injection of series of medium-sized guinea-pigs. Curtis is of the opinion that there is seemingly a tendency to lay undue stress on functional urinary tests at the expense of careful routine examination.

126. **Shock and Hemorrhage.**—The data from experiments reported by Mann may be summarized as follows: In a normal dog 66 per cent. of the blood can be obtained from the femoral artery and 10 per cent. from the heart, making a total of 76 per cent. which can be secured, leaving 24 per cent. in the tissues. In an animal in which the cervical cord is sectioned, producing medullary vasomotor paralysis, 54 per cent. of the blood can be obtained from the femoral artery and 12 per cent. from the heart, a total of 66 per cent., leaving 34 per cent. in the tissues. In an animal in which blood pressure is depressed practically to zero by an overdose of ether, 46 per cent. of the blood can be obtained from the femoral artery and 13 per cent. from the heart, making a total of 59 per cent., leaving 41 per cent. in the tissues. In an animal in which the viscera have been exposed until the clinical signs of shock are present, but in which the vasomotor reflexes are as active or even more so than in the normal condition, only 28 per cent. of the blood can be obtained from the femoral artery and 11 per cent. from the heart, making a total of 39 per cent., leaving 61 per cent. in the tissues.

Mann concludes that the clinical signs of shock which appear after section of the abdomen and exposure of the viscera are due to a loss of circulatory fluid. This loss of fluid is not dependent on any primary impairment of the medullary vasomotor center and takes place at a point beyond the control of the vasomotor mechanism. The causes for this loss of fluid are apparently the same as those which determine the accumulation of fluid in any other irritated area and produce the signs of inflammation. The nervous system probably plays no greater part in the former case than in the latter. The condition is made grave when the viscera are exposed because of the great vascularity of the tissues involved.

129. **Fibrin as Hemostatic in Cerebral Surgery.**—Grey suggests the use of sheep's fibrin for controlling hemorrhage in certain types of intracranial surgery. After washing the fibrin repeatedly it is allowed to stand in distilled or tap water for twenty-four hours or longer until all of the enmeshed red blood cells have been laked. After placing the fibrin (previously divided into smaller pieces) into a roomy glass jar containing normal salt solution, the mouth of the latter is covered with cotton and gauze and sterilized. The sterilization softens the fibrin and thus facilitates its absorption by the tissues. It is now ready for use. In this form the fibrin will keep for months. When dipped into a physiologic salt solution and pressed against bleeding points with a sponge or a wisp of dry cotton, fibrin was found to control the hemorrhage even better than wet cotton. The soft and pliable nature of this substance made it adhere to rough and smooth surfaces alike. The difference between fibrin and cotton in this respect was clearly shown when pledgets of each material were pressed over bleeding spots and then removed again after a lapse of a minute or two. Fibrin was found to adhere to the underlying structures much more firmly than cotton. This fact probably accounts for the more efficient hemostasis noted with the former when larger vessels were dealt with.

131. **Abderhalden Reaction in Malignant Tumors.**—In cancer Goodman and Berkowitz examined the blood of sixty-four patients. They obtained positive reactions in fifty-eight. In all of the fifty-eight patients the positive diagnosis of malignancy was confirmed later by clinical, operative, or postmortem evidence. Of the remaining six patients, three are still under observation. In a large series of pregnancy tests, the results were uniformly satisfactory. In a series of cases of angiosclerosis, the authors obtained positive reactions with artery and in several instances with suprarenal substrata. In a series of thyroid transplants they have been able in seventeen instances out of twenty-three to show positive reactions with suprarenal, and in two instances a positive reaction also with pancreas, but only one positive reaction with spleen. All of the specimens of blood taken from animals following the transplantation of organs with the use of blood vessel suture reacted positive with the substrate artery.

133. **Economic Treatment of Hand Infections.**—The treatment of hand infections, in order to give the best results from every viewpoint, Mock holds, must include the proper preventive measures, especially the prophylactic use of tincture of iodin and the early reporting of all minor injuries; the treatment of hand infections as a serious surgical condition from their inception, and whenever indicated the adoption of hospital treatment early; the proper and early diagnosis of the type and nature of infection and the exact location of the pus. Mock advises a proper incision of the abscess in order to establish adequate drainage and yet not spread the infection to other spaces.

134. **Hysterical Joint Neuroses.**—Rand's patient was subjected to sudden trauma, falling on her right hip. The obsession of some severe injury possessed her. She was unfortunately examined before a large body of physicians, in a case in which a diagnosis of fracture of the neck of the femur was made, and its symptoms, prognosis and treatment, discussed. Only after repeated negative Roentgen-ray examinations and the stormy manifestations of her hysterical attack was the condition of true joint neurosis established. The fact that function returned as soon as the patient's confidence was gained supported this diagnosis.

144. **Intra-Abdominal Use of Oxygen.**—Collier has used oxygen intra-abdominally in twenty-five laparotomies, and the results have been most favorable in all. The lessening of shock, the absence of nausea and vomiting and the early recovery from the anesthetic have been the most marked features of its use, and he has not in any case seen any untoward effects. The absorption of the oxygen is quite rapid, and even though there might be some apparent embarrassment of the respiration due to overdistention of the abdomen, Collier has never felt that this was an element of

fear, owing to the rapid absorption of the gas. The distressing postoperative results, so often seen, have been eliminated in those cases in which oxygen has been used, and Collier believes there will be a more widespread use of this valuable adjunct of the surgeon.

Texas State Journal of Medicine, Fort Worth

September, XI, No. 5, pp. 259-312

145 Geographic Distribution of Plague and Its Menace to United States. W. C. Rucker, Washington, D. C.
146 Epidemiology of Pellagra. K. H. Beall, Fort Worth.
147 Better Health in Public Schools. F. J. Slataper, Houston.
148 Trachoma; What Is It That We Should Be Mindful Of It? W. A. Rape, Victoria.
149 New and Apparently Successful Method for Therapeutic Use of Typhoid Vaccine. I. S. Kahn, San Antonio.
150 Diagnosis of Pancreatitis; Report of Cases. H. L. McNeil, Galveston.
151 Study of Venereal Diseases. J. B. Shelmire, Dallas; S. J. Wilson, Fort Worth, and F. C. Walsh, San Antonio.
152 Colloidal Gold Reaction of Lange in Spinal Fluid. E. F. Cooke, Houston.
153 Syphilis and Spinal Fluid. J. J. Terrill, Temple.
154 Intraspinous Use of Salvarsanized Serum. W. L. Allison, Fort Worth.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Indian Journal of Medical Research, Calcutta

July, III, No. 1, pp. 1-204

1 *Relative Therapeutic Value in Malaria of Cinchona Alkaloids. A. C. MacGilchrist.
2 Presence of Leishmania in Peripheral Blood of Cases of Kala-Azar in Assam. F. P. Mackie.
3 New Hemogregarine Found in Pigeon's Blood. F. de Mello.
4 *Two Tests for Syphilis Dependent on Lecithin Content of Serum. H. C. Brown and K. R. K. Iyengar.
5 Simple and Convenient Water Bath for Use in Hemolytic Experiments. H. C. Brown.
6 Bursate Nematodes from Indian Elephant. C. Lane.
7 Falcaustra Falcata Investigation of Oxysoma Falcatum von Linstow, 1906. C. Lane.
8 Lepisma Saccharina (?); Its Life History and Anatomy and Its Gregarine Parasites. J. W. Cornwall.
9 Arneth's Index and Antirabic Treatment. J. W. Cornwall and S. R. Iyer.
10 Studies in Flies. Chetotaxy and Pilotaxy of Muscida and Range of Their Variability in Same Species. P. R. Awati.
11 Bacteriology of Dysentery in Madras Lunatic Asylum. M. K. Pai.
12 Malignant Melanomata; Especially Those Occurring on Heel and Sole of Foot; Report of Cases. W. H. D. Stevenson.
13 Some Anophelines from Arabia and Mesopotamia. S. R. Christophers and K. Chand.
14 Anopheles Brevipalpis Roper, and Description of Its Egg and Larva. C. Strickland.

1. **Cinchona Derivatives Inquiry.**—The main object of MacGilchrist's investigation was to determine the relative therapeutic value of the more important cinchona alkaloids and their derivatives. The five alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin and the two quinin derivatives, hydroquinin and ethylhydrocuprein (optochin) were examined and their relative therapeutic value was determined in the following order, hydroquinin being the most and quinoidin the least effective: (1) hydroquinin hydrochlorid; (2) cinchonin sulphate; quinin sulphate; quinidin sulphate, for all practical purposes of equal value. If any difference, cinchonin is superior to quinin and quinidin is inferior. (5) optochin hydrochlorid; (6) cinchonidin sulphate; (7) quinoidin. As regards unpleasant by-effects of these alkaloids, buzzing in the ears was most frequently associated with quinin and quinidin; amblyopia, with quinin and cinchonin; diarrhea with cinchonin if administered for over a week; and nausea with quinoidin, cinchonidin, even in large doses, caused no unpleasantness of any kind.

The first notable effect of these alkaloids is to arrest sporulation; sporulating forms are the first to disappear from the peripheral blood. Small rings and, somewhat later, half-grown parasites are the next to become rare and disappear. The last forms discoverable in the blood are full-grown schizonts and gametes. The natural protective forces of a person in relatively good health greatly aid the antimalarial action of these alkaloids. At certain stages of development the parasite is more resistant to these alkaloids than at other stages; and, to effect a complete disappearance of the parasite from the peripheral blood, the vulnerable stage in the cycle of development must be reached. It would appear that the minimal lethal doses for the vulnerable stage of the benign tertian, malignant tertian, and quartan parasites are, respectively, about 0.1, 0.15 and 0.2 gm. per 70 kilogram of patient's weight. The dosage being sufficient, the average number of hours required to cause a disappearance of parasites from the peripheral blood is roughly proportionate to the duration of the life cycle of each parasite, the number of hours required in any individual case depending on the period required for the parasite to reach a vulnerable stage in its developmental cycle.

A curious but important fact discovered in this investigation is the smallness of the dose of quinin which is able to free the peripheral blood of asexual parasites, and is possibly able to check the production of gametes. It is rare indeed in practice to give such small doses to patients. The dose usually given being, therefore, generally sufficient, or more than sufficient, in cases in which one has failed hitherto is obviously in the duration of treatment. To a patient in whom gametes have developed it would appear that quinin should be administered daily for a period equal to the life-span of the individual gamete if there is to be any prospect of curing and disinfecting that patient. If malarial patients were really cured and disinfected, malaria would become a rare disease. There is reason to believe that gametes are produced only when the asexual forms of the parasite are becoming exhausted or are exposed to inimical surroundings, as a last defense against total extermination. Ordinary doses of cinchona alkaloids have little influence on crescents when once these are fully developed in the peripheral blood; but they apparently (1) check the production of crescents if administered before these bodies have appeared in the peripheral blood, and (2) greatly shorten the period during which these bodies, having made their appearance during treatment, can be found in the peripheral blood.

Parallelism or harmony between laboratory and hospital results is marked in the case of the five natural alkaloids, quinin, quinidin, cinchonin, cinchonidin and quinoidin; but is entirely wanting in the case of the two synthetic derivatives of quinin, hydroquinin and optochin, indicating that artificial products are more liable to show differences between in vitro and clinical results, as they are not so stable as the natural alkaloids. Improvements in the manufacture of cinchona derivatives, for use in malaria, suggested by the results of this investigation, are as follows: (1) to obtain a bark containing as little quinoidin as possible; (2) to extract quinin for use as such and for the manufacture of hydroquinin; (3) to issue the remaining alkaloids as residual alkaloid, which should contain as little quinoidin as possible, but have a high percentage of quinin, cinchonin and quinidin combined.

4. **Tests for Syphilis.**—The first of the tests worked out by Brown and Iyengar is dependent on the fact that when an aqueous solution of platinum chlorid is added to an alcoholic extract of normal serum, a much heavier precipitate is produced than in the case of an extract of syphilitic serum. They have tested 230 serums by this method and have found that the results follow, with few exceptions, those obtained by the Wassermann reaction and by Fleming's modification; moreover they have found a closer agreement between their test and the Wassermann reaction than they have been able to obtain when comparing the latter with Fleming's modification. The second test is the natural consequence of the first. If one of the properties of lecithin differentiates a syphilitic from a normal serum, the other should do so also. In other words, the capacity of activating cobra venom should be different in the two serums. The authors have tested fifty-five serums by this method and consider that the results bear out the conclusions obtained by their platinum chlorid test.

Journal of Tropical Medicine and Hygiene, London

September 15, XVIII, No. 18, pp. 205-216

15 Nile Boils in Anglo-Egyptian Sudan. A. J. Chalmers and A. Marshall.

Lancet, London

September 25, II, No. 4804, pp. 685-738

16 *Treatment of Typhoid by Stock Typhoid Vaccine. H. W. Wiltshire and A. R. N. MacGillycuddy.
17 Nervous Furring of Tongue and Disturbed Taste. J. Goodhart.
18 Pleomorphism of Meningococcus. A. Lundie, D. J. Thomas and S. Fleming.
19 Neurasthenia Gastrica. J. C. McClure.
20 Case of Multiple Exostoses with Hereditary History. R. Cox.
21 Transmission of Malaria in Northern France. J. H. Dible.
22 Case of Syphilitic Nephritis Treated by Salvarsan. N. Macdonald.
23 Relapsing Febrile Illness of Unknown Origin. J. H. P. Graham.
24 Case of Influenzal Meningitis. C. V. Boland.
25 Testing of Disinfectants. S. Rideal and J. T. A. Walker.

16. **Stock Vaccine in Treatment of Typhoid.**—The cases quoted by Wiltshire and MacGillycuddy are a consecutive series of fifty in which two or more doses of vaccine were given. Seven of these patients died, giving a mortality of 14 per cent. Six of the fatal cases were complicated by severe bronchopneumonia; the seventh died from perforation which occurred at a time when vaccine had certainly reduced the general typhoid toxemia. In all cases the clinical diagnosis was confirmed by bacteriologic means. In forty the bacillus typhosus was obtained by blood culture. In seven it was isolated from the feces. The remaining three patients were uninoculated men who gave a positive Widal reaction, and in two of these the strength of this reaction was found to increase during the course of the disease.

The fifty cases are divided into classes as follows: Class 1, vaccine did harm, 6 cases (12 per cent.); Class 2, vaccine without effect, good or ill, 12 cases (24 per cent.); Class 3, vaccine did good, 32 cases (64 per cent.). Class 1: In three of these cases the harmful effect was due to doses being given with too short an interval (forty-eight hours) between them. They all recovered, the harm done being quite slight. Class 2: (*a*) In five cases the vaccine received a good trial, but appeared to have no effect. As regards general severity of disease, or the stage at which the vaccine treatment was started, these cases did not differ from many in which the vaccine has done good. In all of them, however, the treatment was coincident with a steady increase of bronchitis or bronchopneumonia. Class 3: Group A. Twenty-four cases (48 per cent. of the whole series) showed definite improvement which started after the first or second dose of vaccine, and was continued. Group B. Five cases (10 per cent. of the whole series) showed no improvement from the first two doses of vaccine, but were definitely improved by doses following these. Group C. In one case vaccine was not used until the later stages of the initial fever. Group D. In two cases the initial doses gave good results, but later doses (in one case the third, in the other the fourth) appeared to coincide with the beginnings of intercurrent relapses, which ran an unmodified course. The stock vaccine used was supplied by the Royal Army Medical College.

The authors urge that the treatment should be started as early as possible with an initial dose of 250,000,000. A reasonable suspicion that a patient is suffering from typhoid is sufficient indication for commencing vaccine treatment. The treatment is quite harmless to patients who may subsequently be proved not to be suffering from typhoid. An interval of three days should be given between doses. Shorter intervals are not well tolerated. When a longer interval is given, if four days the dose should not be increased, if over four days the dose should be reduced. Great care must be used in dosage if secondary infections of the lung are present. If possible, the typhoid vaccine should be combined with a vaccine suitable for the secondary infection. Doses should be continued for ten days after the temperature is normal as a preventive against relapse. Preventive inoculation exerts slight, if any, influence on subsequent vaccine treatment.

Sei-I-Kwai Medical Journal, Tokyo

September, XXXIV, No. 9, pp. 45-48

26 Report of One Hundred and Sixty-Three Cases of Uterine Fibroid. M. Yamasaki.
27 Roentgen Ray Shadow in Pulmonary and Pleural Diseases. S. Segawa.
28 Injection of Salt Solution in Tinnitus. K. Matsumoto.

Archives Mensuelles d'Obstét et de Gynécologie, Paris

August, IV, No. 8, pp. 289-336

29 *Rupture of Pregnant Uterus; Three Cases. L. Meyer (Copenhagen).
30 *Origin of Jaundice in the Newly Born. F. Bang (Copenhagen).

September, No. 9, pp. 337-368

31 Origin of Stimulus for Mammary Secretion. P. Zuloaga (Valladolid).
32 Embryologic Study of Double Monster. (Anadidyme Monocéphalien.) A. Keilin.

29. **Rupture of the Uterus During Pregnancy.**—In the three cases reported by Meyer the women had borne several children before and the pregnancy was at term or within eight weeks of term. The symptoms of the rupture were not characteristic, merely indicating some serious lesion in the abdominal cavity requiring prompt laparotomy. The only cause that could plausibly be incriminated for the rupture was a curetting of the uterus three years before in one case and, in the second, expression of a macerated six-months' fetus the year before. The tear in the uterus in both these cases was long and jagged. In the third case a small round hole was found in the fundus of the uterus, suggesting possible attempts at criminal abortion although such were denied. The round ligaments and vessels of the uterus indicated a somewhat infantile development, and this might have been responsible for the rupture. Sudden intense pain at stool was the first sign of trouble.

30. **Origin of Jaundice in the Newly Born.**—Bang's article is practically the same as the one summarized in these columns Aug. 7, 1915, p. 566.

Bulletin de l'Académie de Médecine, Paris

September 14, LXXIV, No. 37, pp. 275-306

33 Wounds of the Hands. (Considérations sur les blessures de la main par les petits projectiles et les opérations complémentaires qu'elles réclament.) E. Delorme.
34 Bradycardia from Heart Block in Boy of Nine. (Bradycardia vraie par dissociation totale auriculo-ventriculaire.) A. d'Espine and Cottin (Geneva).
35 The Paratyphoid Micrococcus n. sp. A. Sartory and P. Lasseur.
36 Localization of Projectiles in the Tissues. (100 localisations de projectiles par le compas radio-chirurgical de C. Infroit.) C. Infroit.

Journal d'Urologie, Paris

September, VI, No. 4, pp. 409-504

37 *Degenerated Condition of Leukocytes in Urine as Early and Reliable Sign of Urogenital Tuberculosis. (Signe de Colombino pour le diagnostic rapide de la tuberculose uro-génitale.) E. Micheli (Padua).
38 Fibromyoma of the Prepuce in Scar of Syphilitic Ulcer. E. A. Delfino (Genoa).
39 *Pyelography in Eighty Cases. T. Plotkin.
40 *Cancer of the Prostate; Two Cases. C. Perrier (Geneva).
41 *Access to the Kidney. (Les voies d'abord du rein.) G. Marion.

37. **Early Diagnosis of Urogenital Tuberculosis.**—Micheli expatiates on the ease, simplicity and reliability of what he calls Colombino's sign, that is, the discovery in the sediment of the urine of deformed leukocytes along with a few red cells. In two cases reported, this first suggested tuberculosis as the cause of the symptoms. No tubercle bacilli could be detected, but the polynuclear leukocytes and some of the mononuclears showed the most remarkable shapes, the edges as if gnawed and fringed. No characteristic lesions could be found, but treatment as for tuberculosis of the bladder soon brought marked improvement and examination later revealed traces of tuberculous granulations.

39. **Pyelography.**—Plotkin gives fourteen pyelograms with an accompanying description, saying that complications developed in three of the eighty cases in which he applied pyelography in Joseph's service at Berlin. One patient had severe colic after the injection of the silver salt solution, and had to be kept in bed for twenty-four hours. Another had mild colic, and in the third case there was fever and much agitation for four hours. The pyelography was done on outpatients, as a rule, and the catheter was always narrow enough to permit reflux of any excess of fluid. If catheterization causes pain or hemorrhage, no attempt should be made at pyelography. In skilful hands the latter is free from danger, he declares. It is merely a simple rinsing out of the pelvis.

40. **Cancer of the Prostate.**—The hardness of the tumor in the prostate was the only sign that suggested malignant disease in one of Perrier's two cases. In the other the cancer had softened and broken down until the palpation findings were approximately normal. In one case there were also hard presacral lymph glands. In one case there was metastasis in the corpora cavernosa. If a catheter is not tolerated, suprapubic cystostomy gives the most relief with inoperable cancer of the prostate.

41. **Modes of Access to the Kidney.**—Marion's study of the various technics for exposing the kidney is accompanied by ten illustrations.

Presse Médicale, Paris

September 16, XXIII, No. 43, pp. 353-360

42 *Extraction of Projectiles in the Lungs. G. Marion.
43 *Atypical Sunstroke. (De l'insolation.) C. Lian.
44 Experimental Pharmacologic Study of Colloidal Gold. H. Busquet.

42. **Extraction of Bullets and Scraps of Shell from the Lungs.**—Marion has been surprised at the ease with which he extracted intrapulmonary projectiles in all but one of the twenty-seven cases in which he attempted it. In the one case that failed he had neglected fixation of the lung before opening the pleura. In two cases the projectile was in a pus pocket that had opened into the air passages; in three others it was found in a pus pocket which there had been nothing to suggest beforehand. All the patients promptly and completely recovered. Each case is described in detail.

43. **Atypical Sunstroke.**—Lian reports three cases in which men working several days in the sun gradually developed the syndrome of meningeal irritation, symptoms of subacute meningitis bringing the men to the hospital by the end of the week. The intense headache, vasomotor disturbance and slowing of the pulse were accompanied by extreme depression and slight fever. The clear fluid spurted under pressure on lumbar puncture. In one case there was stupor for twenty hours and slight stiffness of the neck. Another atypical form of sunstroke was encountered in one soldier who had been digging for several hours in the sun. There was sudden and acute dilatation of the heart, with extreme arrhythmia. The man was a robust farmer and was sweating freely when attacked by this cardiac form of sunstroke. Lian tested the heart functioning in a number of soldiers known to have slight cardiovascular derangement, and found that the myocardium showed signs of weakness after prolonged exposure to the sun. Complaints of progressively increasing headache during exposure to the sun should suggest the slow meningeal form of sunstroke, while symptoms on the part of the heart call for heart stimulants, and possibly a purge, with nothing by the mouth but water at first and then milk.

Berliner klinische Wochenschrift

September 13, LII, No. 37, pp. 961-988

45 *Hemorrhagic Aplastic Anemia. (Aleukia haemorrhagica.) E. Frank.
46 *Intraneural Injection of Antitetanus Serum at First Local Symptoms. A. W. Meyer.
47 Brain Lipoid as a Hemostatic. A. D. Hirschfelder (Minneapolis).
48 Perforation of Aortic Aneurysm into the Trachea. C. Hart.
49 Localization of Projectile in Tissues. (Das Aufsuchen des Fremdkörpers durch den Arzt nach Lokalisation.) W. Salow. (Zur Röntgenstereoskopie.) W. Salow.

45. **Aplastic Anemia.**—The affection which Frank calls aplastic (aregenerative) anemia-panmyelophthisis develops as hemorrhagic purpura which continues a steadily progressive course until the patient succumbs to the anemia in the course of a few weeks or months. In 11 of Accolas' 19 cases the age was under 30; Türk's 2 patients were a girl of 18 and a boy of 12, and Kleinschmidt's patient was a girl of 4½. Frank reports in detail a case in a woman of 33. She had contracted syphilis fourteen years before but was apparently in perfect health when given an additional mild course of mercury and salvarsan. Eight days after its conclusion the hemorrhagic purpura developed and progressed to a fatal termination in fifteen days. In this, as in all the cases on record, the small numbers or total absence of blood platelets was a striking feature of the cases. The affection seems to be a primary leukomyelotoxicosis, with secondary anemia partly from the loss of blood and partly myelophthisic anemia. It is quite distinct from pernicious anemia. Without examination of the blood, the cases would usually be classed as sepsis. The "hemorrhagic aleukia," as he also calls it, opens the portals to septic infection. It may develop as an ulcerating or necrotic throat or mouth trouble; in his case there was buccal periostitis. The sepsis is merely an accident in the course of primary toxic destruction (aleukia) or overproduction (aleukemia) of myeloid tissue.

46. **Intraneural Injection of Antitetanus Serum with Local Tetanus.**—Meyer calls attention to his success in aborting tetanus by an intraneural injection of antitetanus serum into the trunk nerve of the limb, above the injury, when the slightest tendency to twitching or contracture became evident in the limb. These local symptoms long precede the systemic and general symptoms, and a prompt intraneural injection may arrest the further spread of the tetanus and restrict it to the limb involved and cure it there. He impresses on the soldiers in his charge the necessity for watching for twitching and contracture of a muscle in the limb, and the importance of immediately notifying the physician.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 4, XLV, No. 36, pp. 1121-1152

50 *Deforming Osteochondritis of the Hip Joint in the Young; Five Cases. G. A. Guye and H. J. Schmid. Concluded in No. 37.

September 18, No. 38, pp. 1185-1216

51 Present Status of Bacteriotherapy. J. L. Burckhardt.
52 *Sulphur Disinfection. L. Kloemann.

50. **Juvenile Deforming Osteochondritis of the Hip Joint.**—Guye and Schmid give a detailed study of four cases of what they call Calvé-Perthes' disease, with the Roentgen-ray findings. The children were from 4½ to 8 years old, all boys, but they encountered later a fifth case in a girl of 6. The various features of the group of cases are tabulated for comparison. In all the cleft in the joint was abnormally wide as seen by roentgenoscopy. The head epiphysis was crushed down and deformed, the epiphyseal line irregular or no longer recognizable, or studded with spots and gaps. The neck was broader than normal and curved in all but one case. The future will decide whether tuberculosis has nothing to do with the affection as at present assumed by most writers on the subject. The head epiphysis seems to pass through four stages, first a flattening out and spreading over the neck, then a splitting into two or three fragments abnormally rich in lime, then a splitting of these fragments into numerous smaller fragments which have lost their lime, and, finally, a stage in which the head epiphysis disappears, or, if lime is given systematically some of the fragments may regain their consistency and strength.

Treatment should be based on the cause, which some think is incomplete and tardy ossification; and others ascribe it to some disturbance in the local circulation. In either case weight-bearing aggravates the condition, and immobilization is the logical treatment. The affection always tends to a spontaneous cure and operative measures are not called for. Extension of the limb, keeping the child in bed, relieved the pain and the complications rapidly subsided in their experience. General measures to strengthen the organism as a whole are important aids, sun-baths and massage in particular may prove useful. The contracture of the adductors disappeared completely under a month of bed rest and immobilization by extension in one case; another patient required eight months of treatment, but all finally were clinically cured and have no perceptible limp.

52. **Improved Technic for Sulphur Disinfection.**—Kloemann has found that sulphur sterilization is much facilitated by adding potassium chlorate to make it burn more readily. He mixes about four tablespoonfuls of pulverized sulphur with an equal amount of $KClO_3$ and strews this on the bottom of the vessel. The sticks of sulphur are then placed on this and what is left of the mixture is poured on paper and this is placed between the sticks and the paper lighted with a match. The whole mass then burns quickly and completely.

Deutsche medizinische Wochenschrift, Berlin

September 16, XLI, No. 38, pp. 1117-1144

53 *Hodgkin's Disease with Eruption. (Lymphogranulomatose mit pemphigusartigem Ex- und Enanthem neben granulomatösen Hautknoten.) E. Hoffmann.
54 Starch-Agar Culture Medium for Cholera Germs. (Ein neuer Nährboden für die Cholera-Diagnose.) C. Lange.
55 Treatment of Typhoid with Vaccines. H. Reiter.
56 *Uremia. H. Machwitz and M. Rosenberg.
57 Differential Percussion Findings with Subphrenic Gas Abscess. L. Nyary.
58 Chemical Sterilization of Drinking Water. (Trinkwassersterilisierung mit Chlor.) F. Ditthorn.
59 Cyclopean Monster with Snout. (Zur Kasuistik der Zyklopie mit Rüsselbildung.) S. Durlacher.
60 *The Functions of the Spleen. (Die Funktionen der Milz.) H. Hirschfeld. Commenced in No. 37.
61 The Medical Officer with the Reserve Battalion. (Der Arzt beim Ersatz-Bataillon.) Torkel.

53. **Lymphogranulomatosis.**—In the first of Hoffmann's two cases a butcher of 37 had typical Hodgkin's disease accompanied by a skin affection suggesting pemphigus and evidently of toxic origin. This assumption was confirmed by the aggravation of the pemphigus as the glandular tumors retrogressed under Roentgen treatment. With hard Roentgen tubes, 20 X, and 2 mm. aluminum filter, all the lymphomas subsided, and also the infiltration in the skin. There was a mild recurrence four weeks later. A second similar course was followed by improvement again. The patient now, four months after he was first seen, feels quite well and the glands are all normal in aspect except for slight enlargement of some in the neck and axillae. A third course of Roentgen treatment has just been instituted including the spleen also. Roentgen treatment was promptly effectual likewise in the second case. The spleen was enlarged and there was eosinophilia reaching 30 per cent. Roentgen treatment also helped in some cases of fungoid mycosis. Tuberculous lymphomas did not retrogress so fast and transient fever developed, suggesting a tuberculin reaction.

56. **Uremia.**—Machwitz and Rosenberg have examined and applied various tests in 160 cases of nephritis in the last two years. The findings and deductions all confirm the advantages of classifying the uremia with nephritis as true uremia, uremia with convulsions, and the pseudo-uremia of arteriosclerosis. As a rule these types are distinct. True uremia is found with acute glomerular nephritis, and with secondary and genuine contracted kidney. The diagnosis is based on the high urea and residual nitrogen content of the blood and the indicanemia. Restriction of the amount of albumin in the diet is desirable in this form of uremia. Uremia with convulsions occurs most commonly in acute nephritis in the young. The prognosis is generally favorable. In treatment, lumbar puncture is the most important measure at our command. Pseudo-uremia is encountered with purely atherosclerotic affections of the kidneys. It is the result of atherosclerotic changes in the brain, and is distinguished from true uremia by there being no retention of nitrogen and no indicanemia. Treatment should be addressed to the atherosclerosis, aiming to arrest the progress of the arteriosclerosis and ward off heart failure. Stimulants for the heart may be necessary, and restriction of intake of fluids. Volhard lays great stress on this reduction of the amount of fluids taken, and it has proved surprisingly effectual also in their experience. The systolic blood pressure was up to 250 mm. mercury in some of these cases, and moderate amounts of albumin and casts of all kinds were found in the urine. The necropsy findings in a typical case described showed atherosclerotic changes in the brain ample to explain all the symptoms suggesting true uremia, even the epileptiform convulsions. This patient was a woman of 47 who had swollen feet for six months, and then an attack of unconsciousness for a few minutes. Six months later there was another attack, followed by headache, disturbances in vision and recurring convulsions for fifteen minutes at a time. There was pronounced excentric hypertrophy of the left ventricle but no albuminuric retinitis. There was no indican in the serum but 3 per thousand urea in the blood. No treatment was instituted except restricting the intake of fluids, and in four weeks the patient was free from all disturbances and had no further trouble for five months. Then the heart symptoms, edema, dyspnea and convulsions returned and fatal heart failure soon followed.

60. **Functions of the Spleen.**—Hirschfeld discusses in detail the various functions of the spleen as an organ for production of blood and for destruction of red corpuscles, for iron metabolism, and as regulator of the red corpuscle production in the bone marrow, and, finally, as an organ concerned in some way with digestion. It swells and becomes full of blood at the height of the digestive process. At the same time, he adds, none of these functions is indispensable; any one of them can be promptly assumed by some other organ, and there is no appreciable general disturbance after removal of the spleen in most cases. Exceptionally, however, persons are encountered who are unable to get along without the spleen and respond to splenectomy with a severe disturbance, polycythemia.

Medizinische Klinik, Berlin

September 12, XI, No. 37, pp. 1015-1038

62 Suppurative Pneumococcus Meningitis Consequent on Pneumococcus Appendicitis and Periappendicitis. H. Eichhorst.
63 Neurology in War. (Kriegsneurologische Erfahrungen.) C. Mayer.
64 Gas Phlegmons in the Wounded. Sackur.
65 Serotherapy and Prophylaxis of Dysentery. (Zur Ruhrbehandlung.) O. Bujwid.
66 Filaria in the Blood; Three Cases. (Ueber bisher unbekannte Filariablutbefunde bei gefangenen Russen.) M. Bockhorn.

Münchener medizinische Wochenschrift, Munich

September 14, LXII, No. 37, pp. 1241-1276

67 The Foreign Body Telephone. (Das Fremdkörpertelephon.) Holzknecht and Wachtel.
68 Technic for Colloidal Silver in Therapeutics. J. Voigt.
69 Arsenic Keratosis After Injection of Salvarsan. C. Philip.
70 Psychiatry in War. (Kriegspsychiatrische Begutachtungen.) W. Weygandt.
71 *Constricting Band in Treatment of Severe Grenade and Shrapnel Injuries. (Die Stauungsbehandlung schwerer Granat- und Schrapnellverletzungen.) E Sehrt.
72 Relapsing Fever. (Beobachturgen über Rückfallfieber.) F. Levy.
73 Trichinosis. Putter.
74 Operative Treatment for Abdominal Wounds in War. L. Basl.
75 Internal Ear Disturbance from Explosion of Shell Nearby. (Detonationslabyrinthosen.) R. Hoffmann.
76 Eczema Developing After Application of Pellidol Salve. A. Störzer.
77 Emergency Fixation and Extension with Sheets of Perforated Zinc. K. Fischel.
78 Emergency Artificial Leg. (Eine Notprothese für die untere Extremität mit Extensionsvorrichtung.) W. Katz.
79 Improved Technic for Plaster Casts of the Arms. (Zur Gipsverbandtechnik bei Schussfrakturen der oberen Extremität.) O. S. Meyer.
80 Cleaning the Hospital Trains. (Ueber Reinigung der Lazarettzüge bei der Linienkommandantur X Stettin.) Giese.

71. **Passive Hyperemia in Treatment of Shell Wounds.**—Sehrt has been much impressed with the benefit from a constricting band to the limb to induce Bier's stasis hyperemia. He has applied it in seventy-three cases of shell wounds, and found that it had an unmistakable effect in warding off general infection. It seemed particularly useful in this respect when it was applied at once after the injury, and kept up until a wall of granulations had been thrown up to protect the rest of the body. The results were particularly striking in cases of injury of large joints, even after suppuration had already set in. Preservation of function is the main advantage. The constricting band also seemed to aid in the delimitation of gas phlegmonous processes or even arrested the whole process. By the end of a few hours the pain from the lesion is abolished. The constricting band is applied in such a way that the pressure from the bandage is scarcely felt. It is left in place for six or seven days or longer, up to twelve days. The wound itself is left entirely unmolested except for a gauze covering.

Therapeutische Monatshefte, Berlin

September, XXIX, No. 9, pp. 477-532

81 Specific Treatment of Tuberculosis. (Die neueren Methoden der specifischen Tuberkulose-Behandlung und ihre experimentellen Grundlagen.) E. Toenniessen.

Another early sign on the part of the nervous system is the increased sensitiveness of the tissues on the side affected. Gasperini and Goldmann have established the connection between local hypersensibility (skin, muscles, bones and joints) and the site of a tuberculous lesion. The local muscle reactions are also liable to be exaggerated. This is most evident in the pectoralis and sternocleidomastoid muscles, as a rule. Neuritis, a tendency to polyneuritis, may be the first manifestation of a latent tuberculosis. In such cases the neuritis generally develops insidiously and affects the nerves connected with the pectoralis, deltoid, biceps or bronchial musculature. While the nerve trunks involved may present signs of inflammation or degeneration, the muscles between which they pass respond normally to all tests. This is a special feature of tuberculous nervous derangement. The spinal cord and the brain may suffer likewise from the tuberculous toxins, and the sexual organs may be abnormally stimulated while the normal inhibitions become less evident. He cites experimental data and observations on cattle testifying to the exaggerated erotic state liable to be induced by incipient tuberculosis.

There does not seem to be any parallelism between the extent of the tuberculous focus and the nervous disturbances. In fact, the latter are generally most pronounced in the earliest phases and in the walled off, sclerogenous, rather benign foci. The toxins in the closed foci are all taken up by the blood or lymph and none are cast off, as with an open lesion. Esquirol has recently reported that in the tuberculous insane, in his asylum, the mental derangement grew worse as the local tuberculous affections improved and vice versa.

Policlinico, Rome

September 26, XXII, No. 39, pp. 1298-1332

92 Psychologic Examination of Recruits. (Per l'applicazione di esami psicologici nell'esercito.) U. Loreta.
93 Chemical Sterilization of Drinking Water. (La purificazione dell' acqua con il cloruro di calce.) D. Ottolenghi.

Riforma Medica, Naples

September 25, XXXI, No. 39, pp. 1065-1092

94 Echinococcus Cyst in the Brain of Young Man Causing Cerebellar Syndreme and Paranoid Dementia. C. Todde.

Mitteilungen a. d. med. Fakultät der k. Univ., Tokyo

XIV, No. 1, pp. 1-216. German Edition. Last indexed July 24, p. 370

95 Antipyretic Action of the Earth-Worm. (Ueber die antipyretische Wirkung des Regenwurms und dessen wirksamen Bestandteil.) S. Nukada and B. Tanaka.
96 The Hair of the Chinese. (Rassenanatomische Untersuchungen an Chinesen. I.) T. Kubo.
97 Toxin of Silk-Worm Bacilli. (Ueber das Toxin von sog. Sotto-Bacillen.) K. Aoki and Y. Chigasaki.
98 The Precipitation Reaction in Silk-Worms. (Prazipitationsreaktion bei Seidenraupen.) K. Aoki.
99 Physiologic Fluctuations in Sugar Content of the Blood. K. Sakaguchi, T. Kasai and Kinyosai.
100 Lipoids in the Nerve and Glia Cells and Vessel Walls in the Central Nervous System. F. Shionoya.
101 Microscopic and Microchemical Study of Vegetable Detritus in Excrements of the Japanese. K. Kyuno.

Brazil-Medico, Rio de Janeiro

September 8, XXIX, No. 34, pp. 265-272

102 Profuse and Repeated Hematemesis from Varices in Esophagus and Stomach of Liver Origin. J. Froes. Commenced in No. 33.
103 The Leishmanioses in South America. (Subsidio para o estudo da physionomia clinica, classificação e synonymias das leishmanioses na America do Sul.) A. A. da Matta.

September 22, No. 36, pp. 281-288

104 The Flagellate Parasites of Mammals in Brazil. II. (Um novo parasito do homen.) R. da Fonseca.
105 *Nodular Mycosis of the Hair; Fourteen Cases. (Considerações sobre a piedra.) O. Torres.

105. **Nodular Mycosis of the Hair: Piedra.** — Torres describes this parasitic infection of the hair which attacks the young by preference, forming minute gritty nodosities along the hairs of the affected scalp. All his patients were promptly cured by application of a 5 per cent. alcoholic solution of salicylic acid after bathing or washing the hair. The alcohol cuts out the grease and as it evaporates the acid is deposited in a fine powder on the nodules. It never seemed to injure the hair in any way. Cultures of the parasite kept their virulence up to five months in his experiments.

Russkiy Vrach, Petrograd

XIV, No. 31, pp. 721-744

106 *Bacillus Pyogenes Albus Diphtheroides (Pseudodiphthericus) in Suppurating Gunshot Wounds. A. D. Pavlovsky.
107 *Poisoning from Asphyxiating Gases. N. A. Beloff.
108 Lead Deposits in Conjunctiva. A. I. Pokrovsky.
109 Lysoform in Erysipelas. V. A. Izvolskaya.

No. 32, pp. 745-768

110 *Experimental Chancroid in Rabbits. V. I. Terebinsky.
111 Foreign and Russian Mineral Waters. O. V. Verbitzky.
112 Influence of the Position of the Limb upon the Nerves in Gunshot Wounds. K. T. Wegner.

No. 33, pp. 769-792

113 *Early Signs of Exophthalmic Goiter. N. M. Popoff.
114 Suture of Vessels in Treatment of Aneurysms in the Present War. L. G. Stukkey.
115 *Bacteriology of Typhus Fever. M. S. Milman.
116 *Primary Carcinoma of the Lungs. A. V. Lavrinovich.
117 Ear Lesions from Military Causes. B. I. Khoronjitzky.
118 Hard Chancre of the Lids. A. G. Dmitrieff.
119 *Tincture of Iodin in Internal Medication. M. A. Zaussailoff. Commenced in No. 21.

106. **Pus-Generating Diphtheroid Bacillus.**—In 200 cases of various suppurations in wounded soldiers Pavlovsky found the pyogenes diptheroid bacillus in 6 per cent. in pure cultures, and in 6 per cent. mixed with staphylococci. The microbe in question he described in 1909. It is usually located outside the cell; stains with the Gram, and resembles a diphtheria bacillus recently cultivated. It grows on agar in twenty to twenty-four hours at 35 C. and on Loeffler's serum, and does not liquefy gelatin. Guinea-pigs injected in the abdominal cavity with 1 c.c. of the bouillon culture died within from thirty-six to fifty-two hours, and the cultures from their liver and blood gave on Loeffler's serum the same diphtheroid cultures. Clinically there is suppuration with formation of grayish or whitish-gray pus, moderate fever (102 C.), and occurrence of fistulas, but the infection seems to be rather localized, the symptoms of systemic or general infection being mild. The prognosis is therefore good. Pavlovsky thinks that this microbe should be added to the group of those considered as the primary cause of suppuration.

107. **Gas Asphyxiation in War.**—Beloff treated fifteen soldiers poisoned with asphyxiating gases who came under his care four days after the onset of the poisoning. The symptoms were those of bronchitis (cough and slight dyspnea), accompanied by headache and loss of consciousness. The cases were rather mild; there were no blood changes, but the skin was dry and the conjunctiva pale. In one case only was the conjunctiva hyperemic. The heart beat was accelerated (96 per minute); the sounds were dull, with the second pulmonic accentuated. The appetite was poor, the temperature normal. Digitalis gave better results than expectorants, Dover's powder, etc.

110. **Experimental Chancroid in Rabbits.**—Terebinsky succeeded in inoculating rabbits in the scrotum with chancroid. Only those inoculations proved successful in which he artificially temporarily prevented phagocytosis. This he accomplished by causing on the animal's abdomen an artificial irritation with tincture of iodin. A small piece of gauze soaked in the latter was passed underneath the skin, after two cutaneous incisions had been made at a short distance from each other, so that the gauze passed from one incision to the other. The bacteriologic and microscopic examinations both showed that the inoculations were successful. The inoculation chancroids on the day following the inoculation showed very small bloody scabs, surrounded by slight redness or without any reactive changes. Pus was occasionally present. A typical chancroid showed on the fifth day, containing numerous streptobacilli. The latter are taken up by the nuclear leukocytes, marked phagocytosis thus taking place. By the eighth day the process of repair was in evidence and healing was complete by the tenth day, in some. In others it took nineteen days to heal, the average having been two weeks.

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Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 11, II, No. 11, pp. 1399-1470

120 Early Symptoms of Organic Disease of the Central Nervous System. (De beginverschijnselen der organische zenuwziekten.) L. Bouman.
121 Food Value of Bran. (De voedingswaarde en het dietetisch gebruik van zemelen.) E. C. van Leersum.
122 *Heart Block in Exophthalmic Goiter. (Een zeldzame *stoornis in* de hartwerkzaamheid bij morbus Basedow.) D. de V. Reilingh.

September 18, No. 12, pp. 1471-1558

123 *Is Amenorrhea *Necessary for* Diagnosis of Extra-Uterine Pregnancy? G. C. Nijhoff.
124 Measurement of Small *Amounts of* Sugar *in the* Urine. (Over de bepaling van kleine hoeveelheden *suiker in urine.*) S. Nagasaki (Japan).
125 Acute Yellow *Atrophy of* the Liver and Functional Tests of the Liver. (Acute gele leveratrophie en functioneele leverdiagnostiek.) C. L. de Jongh.
126 *Radiotherapy in Gynecology. (Stralenbehandeling* bij ziekten der vrouwelijke *geslachtsdeelen*—een aanwinst.) N. J. A. F. Boerma.
127 **Intoxication from Adalin.* A. Nieuwenhuijse.

122. **Heart Block with Exophthalmic Goiter.**—The patient was a woman of about 45 who had long presented symptoms of exophthalmic goiter when signs of heart block became evident, and there were also indications of Adams-Stokes disease. The effect of treatment is discussed and also the light thrown possibly on etiology of each of these three affections by their coincidence in this case.

123. **Amenorrhea and Extra-Uterine Pregnancy.**—Nijhoff relates some convincing clinical experiences which demonstrated that an extrauterine pregnancy may be under way and rupture occur, even when the interval since the last menstruation is less than four weeks.

127. **Adalin Poisoning.**—Called to a young man absolutely unconscious, Nieuwenhuijse found symptoms like those of veronal poisoning, and an empty box that had contained adalin powders. The young man recovered under saline subcutaneously, stimulants and clearing out the stomach and bowels, but the symptoms were very severe while they lasted. The unconsciousness persisted for nearly sixty hours. The dose had been about 3 gm., namely, ten powders of 0.3 gm. each. It was taken on a friend's advice to relieve insomnia.

Ugeskrift for Læger, Copenhagen

September 23, LXXVII, No. 38, pp. 1509-1544

128 *Syphilitic Cardiovascular Disease. (Syfilitiske Hjertesygdomme.) A. Øigaard. Commenced in No. 37.
129 Treatment of Laryngeal Tuberculosis in Sanatoriums for Pulmonary Tuberculosis. T. Begtrup-Hansen.

128. **Syphilitic Cardiovascular Disease.**—Øigaard reports in detail fifteen cases of aortitis or myocarditis or both in persons known to have had a history of syphilis at some time. The Wassermann reaction was negative in ten and weakly positive in five. Treatment with heart tonics, iodid, morphin, etc., had given no relief, but all were benefited and some apparently cured by treatment for the syphilis. The lack of improvement under the usual measures first gave the clue to the syphilitic nature of the trouble. He has long warned that the symptoms of syphilis may subside before the Wassermann reaction becomes negative, and, on the other hand, that symptoms may recur later without the Wassermann accompanying them. The reaction-free recurrence requires treatment just the same as if the Wassermann were positive. He found further that by using twice or four times the amount of serum, it sometimes was possible to obtain a positive Wassermann reaction when otherwise it was constantly negative. In his group of fifteen cases, those with a positive Wassermann all had myocarditis. In a total of thirty-five cases the most intense reaction was in the patients with aneurysms; next came the cases with aortic insufficiency, then myocarditis cases with a weak reaction, and then the pure aortitis in which group all the cases were negative. In conclusion he says that treatment of syphilitic cardiovascular disease is not difficult, and the results may be more gratifying than in almost any other field.

Upsala Läkareförenings Förhandlingar

February 20, XX. Nos. 3-4, pp. 125-270. Last indexed Jan. 23, p. 380

130 Epidemiologic Research in Sweden. G. Wirgin.
131 *Action of Maltase.* A. Oehman.
132 Anatomy of the Senile Ovary in Rabbits. (Bidrag till ovariernas aldersanatomi hos kaninen.) M. Valberg.
133 **Innervation of the Thymus.* A. Sjölander and A. Strandberg.
134 Curve of Acetone in Experimental Acidosis. G. Bergmark.

133. **Innervation of the Thymus.**—Six colored plates are given showing the anatomic conditions in regard to the nerves in the thymus region as examined on six human fetuses nearly at term. The innervation is double, and fibers from several nerves pass to the thymus.

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THE NEED OF FULL-TIME HEALTH OFFICERS*

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Public health has been demonstrated time and again to be a purchasable commodity. Its value is not generally appreciated, however, and the price is not cheap. Three requirements must be fulfilled before any improvement of sanitary conditions may be guaranteed to a state or a community. These cornerstones on which public health administration rests are:

1. Wise legislation.
2. Adequate appropriations.
3. Efficient health organization.

Behind the three must of course lie public sentiment to cooperate in the enforcement of the measures deemed advisable and make possible their success. In other words, this is the minimum price which any human collectivity, be it nation, state or community, must pay to conquer preventable diseases, and through better health gain increased prosperity.

As a matter of fact, public health organization in the United States has been a plant of slow growth and has been stimulated for the most part by epidemics. The many federal, state and municipal health laws placed on our statute books, having been enacted independently of each other and to meet some emergency of the time, lack uniformity, and not every section has been provided with a local health organization. Moreover, the funds provided to carry on public health work have not been generally sufficient for the purpose. For instance, the total amount appropriated for the work of the State Board of Health of Minnesota in 1915 represented but 0.0034 per cent. of the total revenues of the state based on the figures of 1912, and Minnesota is above the average in support of such work. In at least one state no funds were voted for this purpose.

The conditions in counties and townships all over the land are even worse, practically none of them having full-time health officials. In Kansas, for instance, there were no full-time health officials prior to 1915. The report of the Kansas Commission on Public Health emphasized how unsatisfactory are present conditions from the standpoint of efficiency. The total amount spent for salaries to health officers in the whole state did not reach $42,000, the highest salary paid being in Kansas City, $1,500 per annum, and the average salary being about $310. Naturally, all these officers were also engaged in private practice to gain a livelihood, and many of them held other offices, as coroners and as county or pauper physicians. In many cases it was admitted that politics controlled the appointments, and that it was not unusual to let the lowest bidder have the health office.

In Illinois also, with the exception of Chicago, and of the cities of La Salle, Oglesby, and Peru, which have joined forces, there are, so far as reported, no full-time local health officers. Furthermore, out of 614 cities, towns and villages within that commonwealth, which responded to requests for information, no specific appropriations for health purposes were reported by 425. Of the 189 remaining, 106 had paid health officers, some of whom received as low as $5 per annum.

From the above it is evident that there is opportunity for great improvement, and in my opinion this may best be brought about by the systematic development of local health organization and employment of full-time health officers who are properly equipped to undertake the special duties that should be required of them.

THE IMPORTANCE OF LOCAL HEALTH ORGANIZATION

Of late, special emphasis has been laid on the exercise of larger powers by the federal government in the public health domain. In consequence, the need of strengthening local health administration, especially in rural communities, has been in large measure overlooked, and this subject is only beginning to receive any attention commensurate with its importance.

In other words, while local health administration should be the strongest, in reality it is the weakest link in our chain of national defenses for disease prevention.

It is true that many large cities are well provided, and the reduction in morbidity and mortality rates for the country as a whole in the last twenty-five years is largely attributable to such metropolitan provisions. It must be remembered, however, that 52 per cent. of our total population is rural, that is, live in the country or in towns having less than 2,500 inhabitants. It is for this class that provision should be made.

The federal and state governments cannot be expected to act locally except in great emergencies, it being their function rather to exercise advisory and supervisory powers in respect to local matters. They should encourage the establishment of local health agencies, therefore, and cooperate with them after they are established, to the end that public health work shall be coordinated and conducted in large part automatically in so far as the individual citizen is con-

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* Read before the Section on Preventive Medicine and Public Health at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

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Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

September 11, II, No. 11, pp. 1399-1470

120 Early Symptoms of Organic Disease of the Central Nervous System. (De beginverschijnselen der organische zenuwziekten.) L. Bouman.
121 Food Value of Bran. (De voedingswaarde en het dietetisch gebruik van zemelen.) E. C. van Leersum.
122 *Heart Block in Exophthalmic Goiter. (Een zeldzame stoornis in de hartwerkzaamheid bij morbus Basedow.) D. de V. Reilingh.

September 18, No. 12, pp. 1471-1558

123 *Is Amenorrhea Necessary for Diagnosis of Extra-Uterine Pregnancy? G. C. Nijhoff.
124 Measurement of Small Amounts of Sugar in the Urine. (Over de bepaling van kleine hoeveelheden suiker in urine.) S. Nagasaki (Japan).
125 Acute Yellow Atrophy of the Liver and Functional Tests of the Liver. (Acute gele leveratrophie en functioneele leverdiagnostiek.) C. L. de Jongh.
126 Radiotherapy in Gynecology. (Stralenbehandeling bij ziekten der vrouwelijke geslachtsdeelen—een aanwinst.) N. J. A. F. Boerma.
127 *Intoxication from Adalin. A. Nieuwenhuijse.

122. **Heart Block with Exophthalmic Goiter.**—The patient was a woman of about 45 who had long presented symptoms of exophthalmic goiter when signs of heart block became evident, and there were also indications of Adams-Stokes disease. The effect of treatment is discussed and also the light thrown possibly on etiology of each of these three affections by their coincidence in this case.

123. **Amenorrhea and Extra-Uterine Pregnancy.**—Nijhoff relates some convincing clinical experiences which demonstrated that an extrauterine pregnancy may be under way and rupture occur, even when the interval since the last menstruation is less than four weeks.

127. **Adalin Poisoning.**—Called to a young man absolutely unconscious, Nieuwenhuijse found symptoms like those of veronal poisoning, and an empty box that had contained adalin powders. The young man recovered under saline subcutaneously, stimulants and clearing out the stomach and bowels, but the symptoms were very severe while they lasted. The unconsciousness persisted for nearly sixty hours. The dose had been about 3 gm., namely, ten powders of 0.3 gm. each. It was taken on a friend's advice to relieve insomnia.

Ugeskrift for Læger, Copenhagen

September 23, LXXVII, No. 38, pp. 1509-1544

128 *Syphilitic Cardiovascular Disease. (Syfilitiske Hjertesygdomme.) A. Øigaard. Commenced in No. 37.
129 Treatment of Laryngeal Tuberculosis in Sanatoriums for Pulmonary Tuberculosis. T. Begtrup-Hansen.

128. **Syphilitic Cardiovascular Disease.**—Øigaard reports in detail fifteen cases of aortitis or myocarditis or both in persons known to have had a history of syphilis at some time. The Wassermann reaction was negative in ten and weakly positive in five. Treatment with heart tonics, iodid, morphin, etc., had given no relief, but all were benefited and some apparently cured by treatment for the syphilis. The lack of improvement under the usual measures first gave the clue to the syphilitic nature of the trouble. He has long warned that the symptoms of syphilis may subside before the Wassermann reaction becomes negative, and, on the other hand, that symptoms may recur later without the Wassermann accompanying them. The reaction-free recurrence requires treatment just the same as if the Wassermann were positive. He found further that by using twice or four times the amount of serum, it sometimes was possible to obtain a positive Wassermann reaction when otherwise it was constantly negative. In his group of fifteen cases, those with a positive Wassermann all had myocarditis. In a total of thirty-five cases the most intense reaction was in the patients with aneurysms; next came the cases with aortic insufficiency, then myocarditis cases with a weak reaction, and then the pure aortitis in which group all the cases were negative. In conclusion he says that treatment of syphilitic cardiovascular disease is not difficult, and the results may be more gratifying than in almost any other field.

Upsala Läkareförenings Förhandlingar

February 20, XX. Nos. 3-4, pp. 125-270. Last indexed Jan. 23, p. 380

130 Epidemiologic Research in Sweden. G. Wirgin.
131 Action of Maltase. A. Oehman.
132 Anatomy of the Senile Ovary in Rabbits. (Bidrag till ovariernas aldersanatomi hos kaninen.) M. Valberg.
133 *Innervation of the Thymus. A. Sjölander and A. Strandberg.
134 Curve of Acetone in Experimental Acidosis. G. Bergmark.

133. **Innervation of the Thymus.**—Six colored plates are given showing the anatomic conditions in regard to the nerves in the thymus region as examined on six human fetuses nearly at term. The innervation is double, and fibers from several nerves pass to the thymus.

fix minimum compensations, but these were so small as to preclude the idea of their providing for full-time services.

In North Carolina, however, there are now not less than ten full-time health officers, and their number is increasing. In Massachusetts also, the well-known experiment of several towns combining to secure efficient health service has been successful.

The principle of properly qualified full-time health officers appointed by the local authorities with proper compensation and fixed term of office has also been embodied in legislation recently proposed in a number of states, among which may be mentioned Indiana and Kansas.

The Kansas bill proposed to divide the state into not more than thirty sanitary districts, consisting of one or more counties each. A district board of health was to be created and composed of representatives of the county or counties, and each municipality within their borders. Each board thus formed was to appoint a full-time health officer whose qualifications were to be determined by examination conducted by the chancellor of the State University. These district health officers were to be prohibited from engaging in other business, and, in consequence of the importance of their duties, were to receive a minimum compensation of $2,000 per annum. The tenure of office was to be dependent on faithful and efficient performance of duties, and the jurisdiction of these health officers was to extend throughout their respective districts unless any incorporated city therein might elect to maintain a full-time city health officer.

By the above means it was expected to establish sufficiently large health duties to insure the full-time employment and retention of efficient public servants. It is legislation having this last mentioned object that should be encouraged.

ABSTRACT OF DISCUSSION

Dr. James Adams Hayne, Columbia, S. C.: We believe in a strong central government in Columbia, the capital, in the management of the public health affairs of the state. Our idea of full-time health officers for a county is that they should be paid by the counties and appointed by and hold office at the pleasure of the State Board of Health. In that way we feel that we remove them from local influences and political entanglements. I am fully in accord with Dr. Kerr. The full-time health officer is most important in public health work. No man can serve two masters. A man doing public health work must at once separate himself from the medical profession, because he at once becomes antagonistic to the profession, that is, the general practitioner. The hardest work that any public health official has to do is to get active cooperation on the part of the general practitioner. The physician is the stumbling block of the public health work. He will not report contagious diseases unless compelled to do so by public opinion. As long as public opinion supports him in concealing his cases of contagious diseases he will continue to conceal them; because he loses his bread and butter if he offends his patients by reporting them to health authorities, subjecting them to the discomfort of having quarantine signs put on their houses, and interfering with their going in and coming out. The public is being educated and soon the doctor who does not report will lose his practice. Whenever we arrive at this condition, then we will get some sort of effective public health work. A physician practicing medicine and doing public health work at the same time is going either to fail as a general practitioner, because he will not have any practice, or will fail as a public health worker, because he will pay attention to his practice and not to his public health work. It is, therefore, absolutely essential to differentiate, and recognize that because a man is a doctor of medicine he is not a doctor of public health. This must be impressed on the public, as they will not realize it. I am certain that soon a man will not take an M.D. in order to be a doctor of public health. He will study the general medical course perhaps two years, but after that will specialize on public health work, which is a distinct branch of the medical profession, and should not require the degree of M.D. in order to practice it. Men who do public health work in future will be those who specialize on public health. They must have a certain field open to them after graduating, and this field must be made attractive by its emoluments.

In regard to the cooperation of physicians and acts originating with the physicians, in South Carolina the State Board of Health is the entire medical profession of the state, and constituted so by law. We have 750 members of the State Board of Health, and they appoint or elect an executive officer, and a man from each congressional district, making seven in all; so that any act of the State Board of Health in South Carolina, or any bill from the state board, must of necessity arise from the medical profession of the state. They elect this committee, and the committee passes regulations and so forth, and then the physicians themselves do not obey their own committee.

Dr. A. F. Gillihan, Oakland, Calif.: Dr. Hayne did not mention one thing which has forced itself on my attention since I have been in office; that is, as a *full-time health* officer I can visit other physicians' patients without raising one particle of jealousy on the part of those physicians. This would be absolutely impossible for a part-time health officer in general practice without causing a great deal of animosity, from the very natural fear that he might pick up an occasional patient for himself. The words "to engage in no other occupation" have been used by the speaker. I think this is a good way to express the sentiment. A man doing public health work should not do any other kind of work—should not practice a little on the side. He should not only be occupying his time legally with his position, but he should be morally and actually occupying his whole time with his position. When he is not working at his job he should be dreaming it.

Another condition I desire to mention is the defective administration of public health laws of the state. In California there are some four or five full-time men in charge of public health in municipalities. I am one of these. The State Board of Health can write requesting action on certain matters and I can say "thank you," and throw the communication into the basket. In other words, the State Board of Health of California, as it exists today, has comparatively no authority. It cannot enforce its legislation. I personally do not believe in a health administration consisting of individuals engaged in private practice sitting on a board of health, either in a city or in a state. I am in accord with the New York method and with the United States Public Health Service—whole-time men and whole-time jobs. I believe public health will be advanced only through an organization in which every member is responsible through proper channels to the head of the department. The state should be the central controlling unit; city and country districts mere subdivisions, amenable directly to state control; and finally the state amenable to the federal service. All employees should be on full time. Public health work should be organized along the lines of preventive medicine and not as today, in California, along the old lines of curative medicine. We should lock the door before the horse is stolen. The method in use today is to lock the door after the horse is stolen; in other words, the disease is here and epidemic before the State Board of Health comes in to correct it.

Dr. Adelaide Brown, San Francisco: In California we have a law that has been passed on by our supreme court, that any city can do better than a state law but it cannot do worse. So if the city of Oakland is doing better than the state law on all those points they do not need the state law to help. Governor Johnson has signed a bill giving to the State Board of Health $30,000 for two years for the establishment of a sanitary engineering department; and this we, as members of the State Board of Health, consider the most fundamental thing that could be done for the public health of the state, because water supply and sewage are two prominent questions to which no consulting engineer has time to devote. Governor Johnson signed a bill for the establishment of a bureau of tuberculosis, including a distribution to the counties of the state, that come up to the standard of the bureau in their care of tuberculous people, a per capita assignment. This will jack up the county hospital; and they need the treatment. The bureau of tuberculosis will control the distribution of that money. The hospital will have to take proper care of its tuberculous people before they will get any money from the state.

A very good vital statistics bill was finally passed, although it had fifty-seven changes before it got through.

An antivivisection bill went into the hands of the governor for signature with a pile of telegrams. It was vetoed on the criticism of it on legal grounds by two prominent men. Those of you who have to face antivivisection legislation ought to learn to attack it as soon as it gets to the legislature, and not wait until it gets to the governor.

We have now a milk law which requires general pasteurization of milk. Its enforcement is a matter of state duty.

We have also passed a law advising the use of the prophylactic treatment of ophthalmia neonatorum, and an appropriation for the drugs necessary. We have had also for two years the registration of nurses. Nurses cannot come up for state examination unless the course has been intellectually correct for the young women, and they have been housed correctly, and their course has covered what it should cover and really be an educational course.

The salary of the secretary of the State Board of Health has been increased, which is a recognition for able work. One speaker said that you had to dream public health. I asked a young physician who had a public health position in an adjacent town, a school position, "How many hours do you have to work?" She said, "My salary requires five hours' work a day, and I generally do seven." I think that is practically the proposition. As soon as you limit your day to office hours you cease to be a public health officer. We are taxed by what the work needs and not by any system of hours.

Dr. J. N. Force, Berkeley, Calif.: It is one thing to get the law, and another thing to get it enforced. Here in California we had pretty nearly enough milk law without this new one, but the burden of enforcing the milk law was put on a few inspectors of the state milk bureau and on the local health officers, and of course the milk law was not enforced. I believe with Dr. Kerr thoroughly in the great need of strengthening local health administration. Dr. Gilihan spoke about jealousy of the local health officer. As soon as the local physicians cease to be jealous of the health officer he is beneath contempt, that is, providing that he is engaged in competitive practice. Now, take an illustration of this jealousy. The local health officer says that before children may return to school they should come to his office for a sort of bill of health. Immediately people who are doing pediatrics in the town say, "Oh, the health officer is steering the children down to his office." A man may have the soul of an angel, he may be extremely high-minded in his motives, but just so long as he engages in general practice or even special practice, I maintain he is subject to that criticism, and he is going to get it from somebody. One way apparently of getting round the full-time requirement is to put in a certain working day, and at its close shut down that section of your mind which deals with the public service just as you would shut down your desk. That does not answer the problem, because competitors are going to be just as jealous of a man in the evening as in the morning or between 2 and 4 in regular office hours. It cannot be done on any split basis. The point of view of preventive medicine is entirely different from that of curative medicine. I tried to mix them. I found they would not mix, and I had to give up the practice end of it.

California got as far as having a bill introduced, printed, and referred to the Committee on Public Health and Quarantine, where it was quietly knifed. Some of the features in the bill were that the state should be districted and these districts should have in no case less than 20,000 inhabitants. To develop a population of 20,000 small counties might combine, or a small city might get enough people from the surrounding country. Large counties were not to be subdivided. These small divisions would be inside of the county. There might be deputy district health officers as well as district health officers; and those deputies might either be graduates in medicine or must have a degree in public health from a recognized institution of learning. We put the public health graduate alongside the doctor of medicine with public health training; not saying that he was either better or worse, but saying that there is now a place in the scheme of things for a deputy health officer, not necessarily a medical officer of health; that is still another function; but the health officer having the public health degree.

Dr. William Simpson, San Jose, Calif.: I think I can explain where Dr. Force seems to be at a loss. I am chairman of the legislative committee which at a meeting held in San Francisco decided to ask the withdrawal of the bill until the next meeting of the legislature, for the reason that the bill had not been presented to the committee prior to its introduction into the legislature, and it was then too late to get an opinion from the health officers of the state, as had been agreed at the Del Monte meeting. We were sure it could not pass in the exact form in which it was presented. Every member of the committee was in favor of the full-time health officer, but we felt, as was expressed at the Del Monte meeting, that the men who had been doing the work should have a voice in such important legislation. I am sure no bill can pass unless it allows the counties and districts to make their own appointments. As a part-time health officer I have not had the difficulties with the general practitioner of which many complain, perhaps because our practitioners feel that the health officer is handy to lay things on, and that as a consultant in contagious cases it saves his families an extra fee and relieves him of a trying responsibility.

In California with its cosmopolitan population your inspector's value depends on his knowledge of languages and his ability to explain and give directions in all the dialects there are. The main difficulties of the health officer are in the families in which no physician is called, and here, if he has their confidence, teachers are of great assistance, and probation officers and truant officers valuable in digging out suspected cases. With most parents there is no effort to conceal reportable cases. The child is not sick enough to have a doctor, but may return to school soon enough to infect the school unless a certificate is required in every case before a pupil is allowed to return. Every minute of every health officer's time should be given to his work, for it is because he is not giving it full time that he not only dreams of his work, but has nightmares as well. In framing laws for this purpose in California, or any other state, however, the power of appointing the local health officer must be left to the local authorities.

Dr. T. D. Tuttle, Seattle: Dr. Hayne spoke of the state having $54,000 and the city $150,000. That on the surface looks badly out of proportion, and undoubtedly is; but I have been trying to find out what health officers are paid in Washington. They will write me, "Our appropriation for public health work in our city or county is $250,000." Beautiful. What does that mean? It means what they call "public health work," garbage collection, sewage disposal, sanitary sewers and all that. It is not public health work. It is some of the branches of public health work, but not as we understand public health work. Our state appropriations are not as big as they appear in a great many places. One of the speakers said that the county health officer service is under the direction of the state board of health, and removable by the state board of health alone. That is nice. We have that in Washington. We proceed to remove some county health officer for failure to perform his duty, and call on the county commissioners to appoint his successor. Dr. Jones is removed. We receive a notice by next mail, "We beg to advise you that we have this day appointed Dr. Jones county health officer." Beautiful theoretically; tommyrot otherwise. Unless your state board of health has the appointing power, to a certain extent, you have absolutely no control. Let your county commissioners appoint if you want to; but let your state board of health say who in that locality is subject to appointment; and let the state board or other authority have the power to remove him, and when removed provide that he cannot be reappointed until his stigma has been removed by your approving power. Then your central body has a certain amount of control over your local body and cannot be rebuffed by the local body. Your central body says, "Mr. Mayor, your health officer has failed to perform his duty. We call on you to remove him." He is removed. "Thank you. We recognize your power to remove. We immediately reappoint him." I was for ten years or more thoroughly opposed to the idea of the nonprofessional health officer. Now I am not. I have been converted absolutely over to the other party. The medical man, the practitioner, is not going to help the health officer to a very great extent in eliminating disease. Why should he? Why should I, a practitioner, devote my time or a part of my time, or any of my time, we will say, to a town of 300 people without just recompense not only for that time but for the practice that I cut myself out of? What right have the people to ask the practitioner to help them cut out the practitioner's income? They have no right to it and they are not going to get it. Human nature in the physician is the same human nature that we find in the lawyer, the governor, the president or any other politician. I as an individual have no right to ask you as a physician to deprive your children of bread and butter in order that my children should not have the measles.

DR. OTTO P. GEIER, Cincinnati: Dr. Kerr in his opening remarks said, "wise legislation, adequate appropriation and efficient health organization" were the three desiderata. From my experience as a volunteer in health work in our city I take it that one of the fundamentals has been omitted, because health administration cannot be efficient, no matter whether we have full-time health service or part-time health service, unless that service is free from political control. I believe that most counties, most cities, most states are suffering from poor health administration from the fact that they are under a miserable political control; where men with good intentions have their arms tied and their eyes blindfolded, rather than that they have not inherently good qualities and are ready to serve the public. In the direction of a full-time health service I believe that every man is made of good enough stuff, so that when he gives all of his time to the work he becomes efficient. Most men are intelligent enough, and the job itself brings enthusiasm with it, so that most men will succeed if they are given the opportunity and paid sufficient so that they can give whole service to the job. As to how to get the health service out of politics, that is a larger question which we can hardly cover; but I do believe that the medical profession is largely responsible for the fact that health service is jeopardized by political control. I find in moving about the country that very few county organizations are definitely and wholly in accord and working in harmony with the local health officer. They know not what he is doing, and they seem to care less. Now it does seem to me that the American Medical Association owes it to itself to evolve some sort of propaganada that will get the county society interested in the subject of health work, and that we are lamentably weak as a national organization in having failed to appreciate how that reflects on the medical profession, and how it lowers the dignity of the profession, not only in its public health work, but in private work. Nothing so brings the medical profession to full recognition in a community as good, efficient local health work. In Cincinnati up to 1909 the political organization had absolute control of our organization. The people were disinterested. All meat and milk and other inspection work done by that department was miserably done, and we were spending for a city of nearly 400,000, $55,000 a year. Since 1909 it has been under the domination of the medical men of that city. The medical men dictated nominations to the board of health that was created as the result of a pure milk crusade, and since then the board of health is above reproach, and there is not a suggestion of political interference in the board's work. And we have instead of a $55,000 appropriation, $110,000, and that is restricted to strictly health work. I believe with Dr. Kerr that the larger you make the unit the more forceful will be the work, because the more likely you are to get away from political interferences, and petty jealousies; and I think the department gathers a momentum and a dignity because of its size.

DR. O. B. NESBIT, Gary, Ind.: When I hear health officers talk about lack of cooperation of physicians, I sometimes am inclined to blame the health officer. Unless your public health work originates in your medical society you are going to fail. The health officer who is daily in the newspaper doing his work is not going to get much cooperation from the medical profession. If his campaigns originate in the medical society, and he will get his medical society behind him, he can do anything. A health officer who does not get the medical society in his work is at fault, and can never be an efficient health officer.

DR. J. W. KERR, Washington, D. C.: It is a satisfaction to know that the section endorses the employment of the full-time health officer. Personally I think this is the great problem in this country today in so far as public health is concerned. Few of us realize this fact, notwithstanding there is a great national movement going on for the improvement of health and living conditions. The first laws in the country relating to public health provided for the establishment of local health agencies. The first federal law provided for the cooperation of the national government with local authorities. The first state laws delegated the powers of the respective states to localities, enabling them to establish local boards of health. The relation of the local, state, and federal authorities is therefore fixed; and whether we want to or not we have to recognize that relation. The fact that a particular locality is backward in public health matters does not relieve it of responsibility.

In the desire for larger things we have rather lost sight of the fact that over 52 per cent. of the population of this country live in rural sections, that in these sections lie the real public health problems of the present day, and that the need of public officers is greater in rural sections than in our cities—greater because it is not being met. We have not in the past placed enough dependence on local health organizations. When a society or an individual begins to stir up interest in public health matters, the first thing that is attempted is to establish a commission or agency different from the health department to carry out the work, and the proposed law that is introduced often makes no mention of the local health officer, but aims to establish a new health agency. I think the best example of this is in the tuberculosis laws, of which there has been a mass enacted in the last several years. In many instances the local health officers have not had imposed on them the responsibility for the prevention of tuberculosis, the disease that causes more deaths than any other in the country. This is not the case abroad. In Germany, for instance, they depend on local health organization in local matters. If we in this country expect to advance local health administration and to have it run smoothly so far as the individual is concerned, we must make it our first business to establish a sufficient local organization and give it a living relation with the state and national health organizations.

Predigested Foods.—Experiments of all sorts have been made with predigested foods, compressed foods and the like, but the normal digestion rejects them all. A certain bulk of food is needed to keep the stomach and intestines in order, and unless the juices and ferments required for digestion are called forth in the normal way, the amount secreted will be lowered beyond the point of good health.—J. B. Harrington, *Bulletin*, Kansas State Board of Health, September, 1915.

VARIATION IN THE PLATELET COUNT

ITS CAUSE AND CLINICAL SIGNIFICANCE *

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Remarkably little interest is taken in blood platelets by clinicians, so little in fact that I really hesitate to present a paper on this subject before the section. There are scarcely more than ten or twelve investigators working in this field at the present time, I believe. Nevertheless, platelets are very interesting and remarkable little bodies, and if time permitted me to enumerate some of the interesting facts and problems concerning them, I feel sure you would be convinced that they are worthy of more attention than they receive. This paper must be confined, however, to a brief report of clinical and experimental observations which are thought to throw new light on some of the factors which influence the number of platelets in the circulating blood. They should aid one, therefore, in drawing conclusions from the platelet count in clinical cases.

The platelet count is altered in a great number of diseases.[1] The alterations noted by different observers have been uniform in but few diseases; in fact, there are few lines of investigation in which opinions have been so divergent. One fact on which there is general agreement is that the count is reduced during the febrile period of acute infectious disorders, and increased during convalescence. This interesting change in the count was first observed by Hayem, and was referred to as a hematoblastic crisis. Hayem considered it an effort at blood regeneration. There are striking exceptions to the foregoing generalization. In Escherich's clinic I made a series of platelet counts in diphtheria—a good example of an acute infectious disease. The count was usually reduced during the febrile period of the affection (lowest count 3,000), and increased during convalescence (highest count 750,000). Occasionally, however, the findings were diametrically opposite to this; that is, the count was normal or increased during the febrile period (highest count 750,000), and normal or reduced during convalescence (lowest count 135,000).

In many chronic diseases the majority of observers have noted an increased count, and some have considered this a general rule. In Romberg's clinic I made a series of counts in tuberculosis—a good example of a chronic infectious disease. In harmony with the results of other writers, the count was usually increased, occasionally very much increased (highest count over 1,000,000). In two instances, however, it was very much reduced for several days (in one case to 55,000, in another to less than 1,000). Likewise in a series of observations made in nephritis, the count was often increased when an acute process was demonstrable or when there was marked evidence of renal insufficiency. Occasionally the count was very much increased (highest count 1,260,000). In one case, however, it was very much reduced (lowest count below 10,000).

One interesting feature has characterized the counts which I have made both in man and in animals. When the individual was normal and remained in a given environment, the count remained relatively constant. When the count was markedly increased or markedly reduced by pathologic conditions, it had a tendency to fluctuate. In Chart 1 is shown graphically the platelet count of four normal individuals in the same environment. During a period of eleven days, there was relatively little variation. It fell constantly between the limits of 200,000 and 400,000. In marked contrast to this is the extreme variability of the pathologic counts shown in Chart 2. In one, a case of advanced tuberculosis, the count varied from less than 1,000 to 720,000. In the other, a case of nephritis, the count varied from 350,000 to 1,400,000.

It is believed that the experiments to be reported subsequently throw light on the cause of these apparently errotic results.

EFFECT OF DIPHTHERIA TOXIN ON THE PLATELET COUNT[2]

Diphtheria toxin offered a most promising means of studying pathologic variation in the platelet count. In the first place, the platelet count is highly variable in diphtheria; in the second place, we might reasonably suppose that this variability is a direct result of the action of diphtheria toxin. For this reason, diphtheria toxin was introduced into rabbits in doses of different sizes and its effect on the platelet count noted.[3]

In Chart 3 are recorded the platelet counts of three rabbits following the injection of a dose of diphtheria toxin which caused death in from three to four days. In each case there was a rapid fall in the count. Necropsy showed degeneration of the marrow in high degree. The nuclei of a majority of the megakaryocytes were vacuolated or pyknotic.

In contrast to the foregoing are the results recorded in Chart 4. Here is shown the effect of sublethal doses of diphtheria toxin in three rabbits. The amount of toxin given in these experiments made the animals appear ill for several days. All recovered, however, and were lively throughout the remainder of the experiment. There was first noticed a marked rise in the platelet count. In one instance the count reached a height of 2,000,000. There was next noted a rapid fall in the count. In one instance the count reached the low level of 4,000. This was followed by a second rise in the count, which in one instance reached a height of 2,000,000.

Deduction.—Diphtheria toxin in large doses causes an immediate fall in the platelet count. This is presumably the result of a poisonous action of diphtheria toxin on the bone marrow. In sublethal doses it causes first a rise and later a fall in the count. The latter effect may be followed by a secondary rise in the count. In some cases the count does not descend below normal, so that the only effect actually observed is an increased count. These changes are believed to be due to an irritant effect of small doses of diphtheria toxin on the marrow or an irritant followed by a poisonous effect.

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* From the University of Kansas, School of Medicine, Rosedale, Kan.

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

[1] Determann: Klinische Untersuchungen über Blutplattchen, Arch. f. klin. Med., 1898, p. 365. Helber, E.: Ueber die Zahlung der Blutplattchen im Blute des Menschen und ihr Verhalten bei *pathologischen* Zustanden, Deutsch. Arch. f. klin. Med., 1904, xxi, 316. Kemp, G. T.; Calhoun, Henrietta, and Harris, C. E.: The Blood Plates: Their Enumeration in Physiology and Pathology, The Journal A. M. A., April 7, 1906, p. 1022; April 14, 1906, p. 1091. Wright, J. H., and Kinnicutt, Roger: A New Method of Counting the Blood Platelets for Clinical Purposes, The Journal A. M. A., May 20, 1911, p. 1457.

[2] The platelet counts in these experiments have been reported in detail in a previous paper (Duke, W. W.: Causes of Variation in the Platelet Count, Arch. Int. Med., January, 1913, p. 100).

[3] Blood platelets in rabbits are more difficult to count than those in man. They are smaller and more variable in size and shape, and unless the ingredients of Wright's solution are balanced with care, the platelets will either clump or go into solution. The precautions necessary to obtain reliable counts have been mentioned in a previous paper (Duke, W. W.: Rate of Regeneration of Blood Platelets, Jour. Exper. Med., 1911, xiv, 265).

THE EFFECT OF TETANUS TOXIN ON THE PLATELET COUNT[4]

Because of the interesting results obtained with diphtheria toxin, tetanus toxin was tried. The counts recorded in Chart 5 were observed in three animals which received subcutaneously a large dose of a recently prepared solution of tetanus toxin (eight times the minimum lethal dose for a guinea-pig weighing 250 grams). Although this amount of toxin caused the death of one animal, and marked toxic symptoms in the other two, there was little change in either the platelet or white count. It hardly seemed worth while to pursue this line of work further.

Deduction.—These experiments are hardly complete enough to justify a sweeping conclusion concerning the action of tetanus toxin. At any rate, it may be said that its effect on the platelet count is not nearly so great as that of diphtheria toxin.

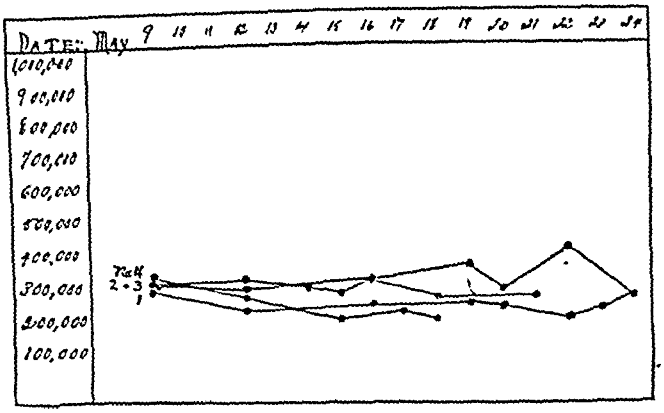

Chart 1.—Platelet count of four normal individuals in the same environment. Note the relatively slight variation of the counts during a period of eleven days.

THE EFFECT OF KILLED TYPHOID BACILLI ON THE PLATELET COUNT[4]

Killed typhoid bacilli were chosen for study because of the marked changes in the platelet count which occur in typhoid fever. It was hoped that some of the poisons which produce these changes might be present in the dead bacilli. Killed cultures were employed instead of living bacteria in order that the dose given could be definitely known and not modified by multiplication of bacteria in the animal. The resulting changes in the platelet count were definite and marked, but not so great as those which followed the use of diphtheria toxin.

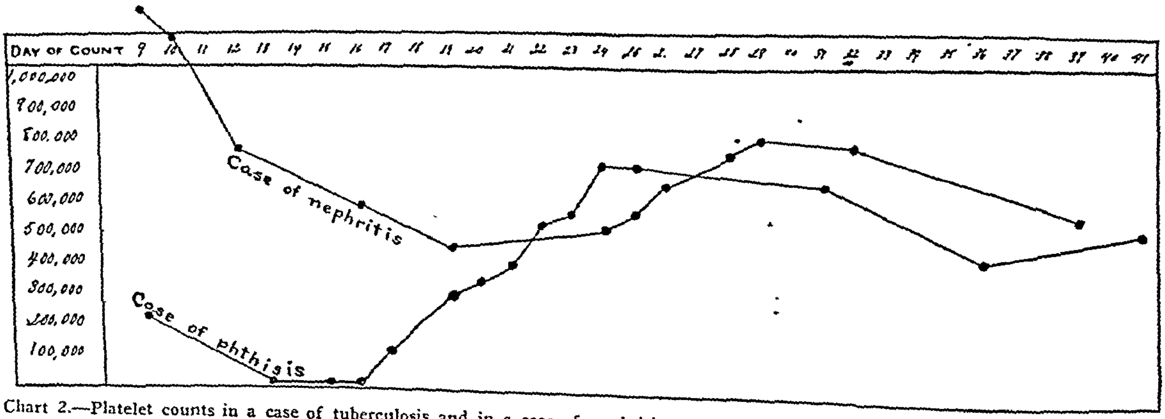

Chart 2.—Platelet counts in a case of tuberculosis and in a case of nephritis. These illustrate the variability of pathologic counts.

In Chart 6 are recorded the platelet counts of three rabbits which received subcutaneously 1,000 million dead typhoid bacilli, suspended in 1.5 c.c. of salt solution. The culture used had been obtained from a case of typhoid fever several months previously. The bacilli were obtained from a forty-eight-hour growth on agar-agar, were suspended in salt solution, and killed by heat (58 C. [136.4 F.] for one-half hour). The animals appeared ill for three days following the injection, but were lively and well throughout the remainder of the experiment. There was in each instance a definite rise in the platelet count which persisted for a few days. In one instance the count reached a height of 1,375,000.

In Chart 7 are recorded results showing the effect of 4.5 c.c. of the same suspension given intravenously instead of subcutaneously. The dose in this case was 3,000 million. Two of the animals were found dead the day following the injection. The one that lived appeared very ill for three days, but was lively and well throughout the remainder of the experiment. There was a marked fall in the platelet count (from 1,210,000 to 340,000) which persisted for a few days. This line of investigation did not promise to yield results of great interest and was discontinued.

Deduction.—The effect of killed typhoid bacilli on the platelet count is marked but not extreme or prolonged. Large doses given subcutaneously increase the count. Large doses given intravenously decreased the count for a few days in the one animal which survived this treatment. One might judge that large intravenous doses poison, and smaller subcutaneous doses stimulate the production of platelets.

THE EFFECT OF BENZOL ON THE PLATELET COUNT[3]

The effect of benzol (benzene, C_6H_6) on the platelet count was studied in both dogs and rabbits. L. Selling[5] had previously shown that benzol poisoning causes a reduction in the leukocytes in man and rabbits and concluded that this was a result of the degenerative changes he found in the bone marrow. It seemed that benzol might have an interesting effect on the platelet count also.

Twelve dogs were given subcutaneously several doses of from 2 to 40 c.c. of Merck's benzol. They all showed profound symptoms of poisoning and died in from four days to three weeks after the first injection. The platelet count fell rapidly in almost every instance. Little if any initial rise was noted. Typical experiments are summarized in Tables 1-4.

Necropsy showed in each instance a hyperemic degenerated bone marrow. The nuclei of most of the megakaryocytes were vacuolated or pyknotic.

Rabbits are not so severely poisoned by benzol as dogs, and are better adapted to this study. In Chart 8 are recorded results showing the effect on the platelet count of five 2 c.c. doses of benzol, given at intervals of twenty-four hours. There was first a marked rise in the count, which in one instance reached a height of 1,230,000. This was followed by a rapid fall in the count, which in one instance reached the low level of 56,000. One rabbit died and the other was killed. The bone marrow was degenerated in high degree. Few megakaryocytes were to be found.

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[4] These experiments are of little interest except as recounted here, and hardly justify a more detailed report.

[5] Selling, L.: Benzol als Leukotoxin, Beitr. z. path. Anat. u. z. allg. Path., 1911, li, 576.

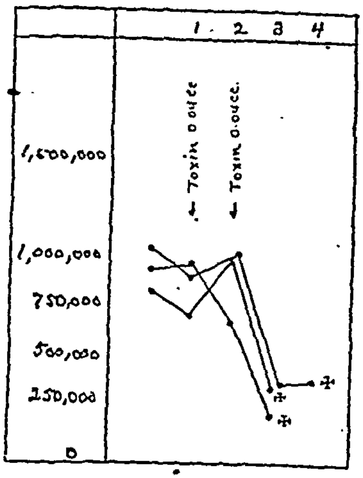

Chart 3.—Effect of diphtheria toxin on the platelet count of three rabbits in doses which caused death in from three to four days.

Chart 9 shows the effect of three 2 c.c. doses of benzol. This caused simply a rise in the count, which in one instance reached a height of 1,780,000. These rabbits showed no visible ill effects from the benzol. They remained lively and apparently well throughout the experiment.

Deduction.—Benzol given subcutaneously in large doses to dogs causes an immediate fall in the platelet count. In smaller doses it causes a lowering of the count, but the effect is not so rapid. This effect is believed to be a result of a toxic action of benzol on the bone marrow. Benzol given in large doses to rabbits causes first a rise and later a fall in the count. In smaller doses it causes a rise only. This is believed to be an irritant effect of benzol on the marrow or an irritant followed by a toxic effect.

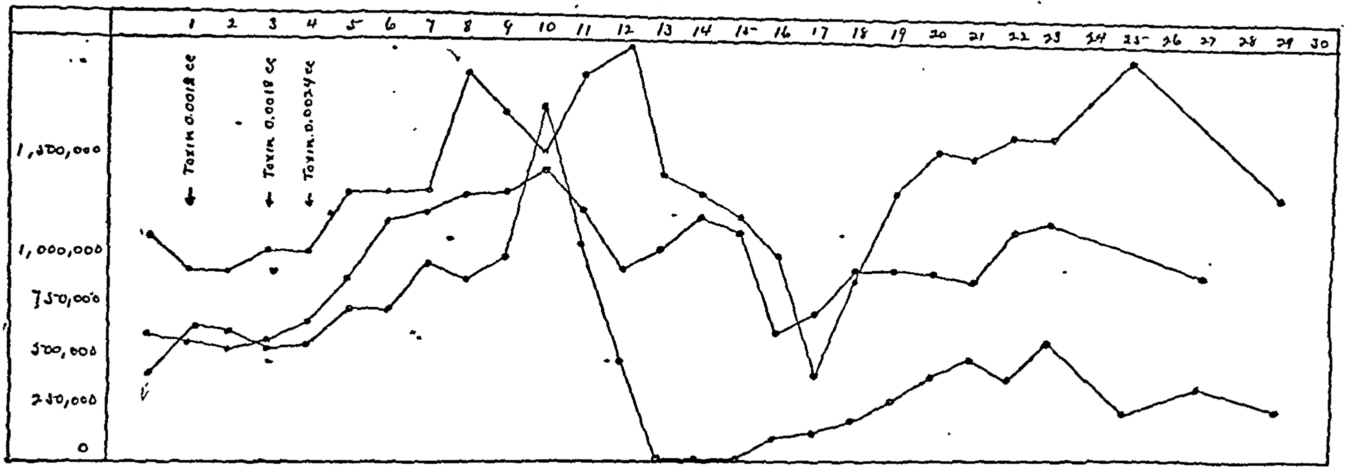

Chart 4.—Effect of sublethal doses of diphtheria toxin on the platelet count of three rabbits.

THE EFFECT OF THE ROENTGEN RAY ON THE PLATELET COUNT[6]

Heineke[7] found that intensive doses of the Roentgen ray cause a reduction in the leukocyte count and destruction of the parenchymatous elements of the marrow. It seemed possible that this agent might also have an effect on the platelet count.

Chart 10 shows the effect of an intensive dose of the Roentgen ray on the platelet count of three rabbits. (Exposure made at 13 inch anode distance with Coolidge tube, 2 mm. aluminum filter, 7 inch spark gap, one-half erythema dose with Hampson's pastille. Exposure repeated in two days with three-fourths erythema dose at skin.)

These were typical experiments. A similar result was obtained in six other cases. In every instance there was a marked fall in the platelet count. There was also a marked fall in the leukocyte count.

TABLE 1.—EFFECT OF BENZOL ON DOG 1

Date		Benzol c.c.	Platelet Count
April 11		10	248,000
April 12		15	....
April 13			46,000
April 14	Found dead	..	

TABLE 2.—EFFECT OF BENZOL ON DOG 2

Date		Benzol c.c.	Platelet Count
April 18		40	368,000
April 19		40	410,000
April 20		..	132,000
April 21	Found dead		

TABLE 3.—EFFECT OF BENZOL ON DOG 4

Date		Benzol c.c.	Platelet Count
April 20		..	280,000
April 21		10	250,000
April 22		..	85,000
April 23		..	116,000
April 24	Found dead		

TABLE 4.—EFFECT OF BENZOL ON DOG 5

Date		Benzol c.c.	Platelet Count
April 21		20	377,000
April 22		..	276,000
April 23		5	....
April 24		5	282,000
April 25		..	44,000
	Found dead		

Chart 11 shows the effect of a shorter exposure (one-fourth erythema dose at skin through 1 mm. aluminum filter). In each instance a rise eventually followed. One of the three rabbits had a very high count to begin with. In this case rapid fall preceded the rise. A second dose of the sam intensity caused in these rabbits a rapid fall in the count. I these experiments a leukopenia also appeared.

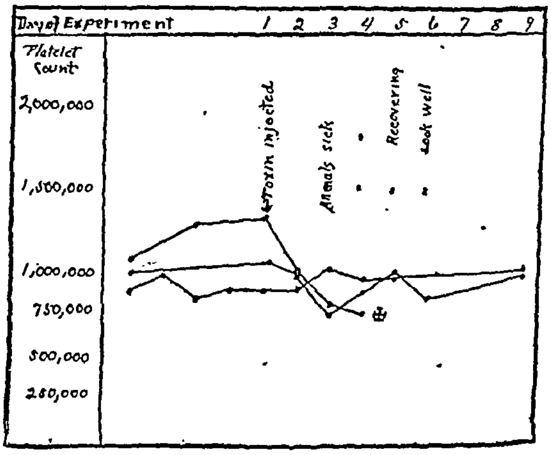

Chart 5.—Effect of large doses of tetanus toxin on the platelet cou in three rabbits.

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[6] These experiments were carried out in collaboration with Dr. E. H. Skinner, and will be reported in detail subsequently.

[7] Heineke: Untersuchung über der Einwirkung der Röntgenstrahlungen auf der Knockenmark, nebst einigen Bemerkungen über die Röntgentherapie der Leukamie und [illegible] des Sarkoms, Deutsch. Ztschr. f. Chir., 1905, lxxviii, 196.

Deduction.—The Roentgen ray in massive dose causes a fall in the platelet count. In smaller doses it causes a rise in the count.

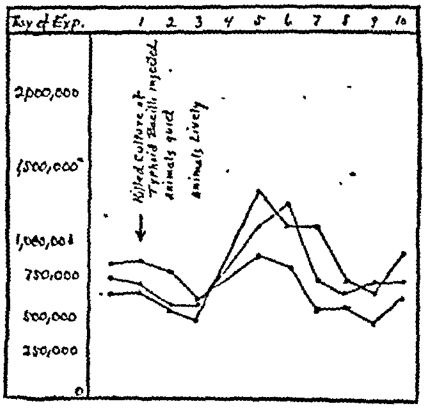

Chart 6.—Effect on the platelet count of 1,000 million killed typhoid bacilli given subcutaneously to each of three rabbits.

Heineke's experiments showing that the Roentgen ray in large doses is followed by degeneration of the marrow suggest that the foregoing results are the effect, respectively, of toxic and stimulating doses of the Roentgen ray on the bone marrow.

THE EFFECT OF TUBERCULIN ON THE PLATELET COUNT

Tuberculin was given subcutaneously or intravenously, in doses varying from 0.1 to 5 c.c. in eighteen experiments. It was hoped that some of the interesting changes in the platelet count observed in tuberculosis might be reproduced. Tuberculin caused a slight change in the platelet count in every instance. When injected subcutaneously it caused a rise in the count which persisted for a number of days. The effect, as a rule, was not great or prolonged, unless some complication, such as anemia or ulceration of the skin, developed. It seemed impossible to give subcutaneously a dose great enough to cause a fall in the count. This was accomplished in all of the six experiments in which tuberculin was given intravenously, but the lowering of the count was transitory (two days) and was quickly followed by a rise. Second doses, given from six to eight weeks after the first, caused a similar change. In Charts 12 and 13 are recorded six typical experiments.

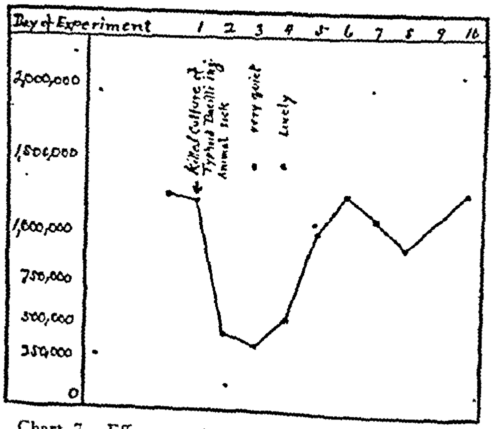

Chart 7.—Effect on the platelet count of 3,000 million killed typhoid bacilli given intravenously to one rabbit.

Deduction.—The effect of tuberculin on the platelet count is similar to that which follows the use of typhoid bacilli. It is marked but not great. Large doses given subcutaneously invariably cause a rise in the count. Large doses given intravenously cause a fall in the count which is quickly followed by a return to normal or a rise.

GENERAL SUMMARY AND THEORETICAL CONSIDERATIONS

The experiments reported here are believed to have disclosed several facts which can be applied to explain the behavior of the platelet count in certain types of diseases. *First of all, it may be stated that it was possible to reduce the platelet count by using a large dose of any agent which in smaller dose caused a rise in the count and vice versa.* The agents used were varied in character, namely, toxins, bacterial emulsions, a chemical poison and the Roentgen ray. Some of the agents used had a rapid and profound effect on the count (diphtheria toxin and benzol). Others had a smaller effect (the Roentgen ray, typhoid bacilli and tuberculin). One of them (tetanus toxin) had almost no effect, although the dose used killed one of three animals and caused toxic symptoms in the others. *The agents with which it was possible to produce the most rapid and extreme rises in the count, namely, diphtheria toxin and benzol, were also the ones with which the most rapid and extreme falls in the count were produced.*

These facts are in harmony, I believe, with the numerous well-known biologic observations concerning stimulants or irritants which act as poisons if employed in sufficient dosage. The most powerful stimulants are also the most powerful poisons, as a rule.

The foregoing generalizations may be employed in the following way to explain the changes in the platelet count in disease. It is believed that diseases in which the platelet count is effected directly by circulating poisons may be divided into two classes.

In the first class come diseases in which powerful irritants to the platelet-forming organs (such as diphtheria toxin and benzol) are elaborated. It is believed that, in diseases of this sort, both high and low counts frequently occur, and also rapid changes from high counts to low counts and vice versa. Some change in the count might be expected even in the mildest cases. That is, when the toxin has such a profound influence on the count, we should expect that a sufficient quantity would be formed in nearly every case, to have its irritant effect, at least. We should also expect that the irritant dose would be exceeded frequently so that the lowered counts would be found as often, or perhaps more often, in the average run of cases, than high counts. The first phase of Hayem's hematoblastic crisis (the fall during the febrile period of an acute disease), according to this view, would be the effect of a quantity of toxin which acted as a poison to the platelet-forming organs. The second

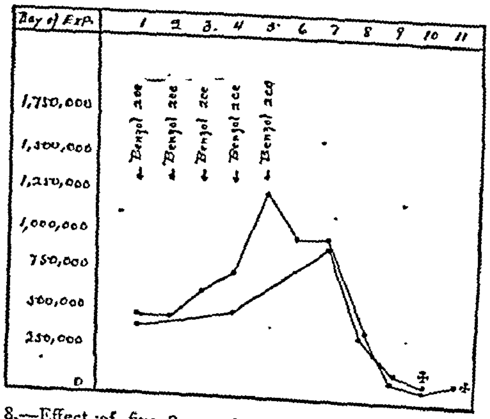

Chart 8.—Effect of five 2 c.c. doses of benzol in two rabbits.

phase (the rise during convalescence) would be a secondary rise after neutralization of the poison. This type of change is the rule in diphtheria—an excellent example of an acute infectious disease. The opposite type of change observed in diphtheria, that is, a rise during the febrile period followed by a fall during convalescence, is believed to occur when the toxemia is less intense. *A hematoblastic crisis would be the rule, then, in all acute diseases in which toxins or irritants are produced in the average case in quantity sufficient to act as a poison to the platelet-forming organs.*

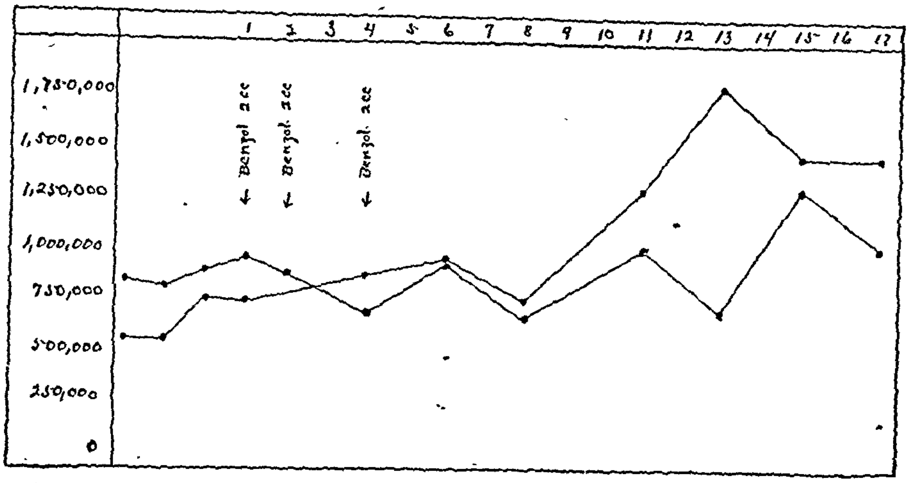

Chart 9.—Effect of three 2 c.c. doses of benzol on the platelet count in rabbits.

Chart 14, in which is shown graphically the effect of varying doses of diphtheria toxin on the platelet count in rabbits, illustrates graphically experiments which seem to be a substantial basis for these statements, and shows the extent to which the platelet count may vary in different grades of the same pathologic condition.

In the second class come diseases in which the irritants produced are mild. One might infer that the counts would here follow the same general law, but that the relative frequency of increased and decreased counts would be different. Increased counts in this case would be the rule. Perhaps a mild irritant, the effects of which could continue as an irritant for a prolonged period, would give rise to a greater increase in the count than the more powerful ones, the poisonous effects of which would appear more quickly. Low counts, the effect of an overwhelming dose, could occur, but would be less frequently observed than in the case of a stronger agent. Tuberculosis and nephritis would appear to be good examples of such a disease. Here the count is almost always increased, but is in rare instances reduced. The experiments with killed typhoid bacilli and tuberculin are thought to be imitations of this type of disease. It was easy to increase the count with these agents. A reduced count was brought about only by giving very large doses intravenously.

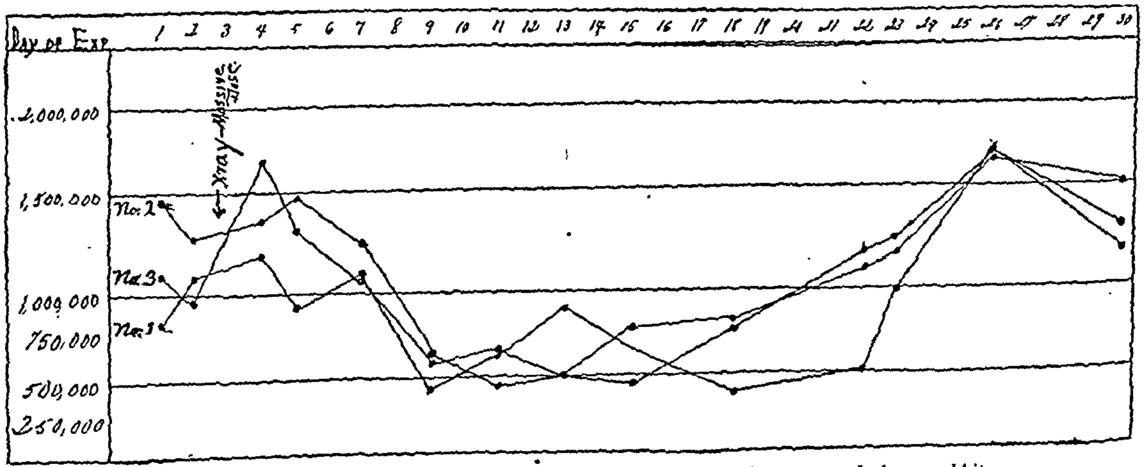

Chart 10.—Effect of an intensive dose of the Roentgen ray on the platelet count of three rabbits.

One might believe, and perhaps with reason, that there exist toxins which can have *only* a poisonous effect on the marrow, and can never increase the count. The existence of such, however, is not proved by these experiments.

There exist, without question, toxins which have very little if any influence on the count. Tetanus toxin is perhaps an example of this type.

Factors other than those noted above also modify the platelet count. It is difficult to say whether or not they may have played a rôle in some of the cases and experiments here reported. The very interesting observation has been made by Hayem, Gley and others,[8] that, following the injection of peptone, in dogs, the platelets tend to clump and can be found forming capillary plugs in the lungs, liver and other organs. Von Behring and others observed the same phenomenon during anaphylactic shock. I endeavored to find the degree to which the platelet count could be lowered in dogs by an intravenous injection of peptone. The count was lowered without question, but accurate counts were impossible on account of clumping of the platelets. Masses of 100 or more were observed. The day following the injection, the count had returned to normal—in fact, it became greater than normal. The tendency to clumping was no longer noticeable.

TABLE 5.—EFFECT ON THE PLATELET COUNT OF A DOSE OF HORSE SERUM GIVEN TO SENSITIZED RABBITS

	Rabbit A	*Rabbit B*
Count before injection of second dose of serum	1,320,000	1,610,000
Intravenous injection of horse serum	0.5 c.c.	0.5 c.c.
Anaphylactic symptoms	Very slight	*Marked*
Platelet count five minutes after injection	2,120,000	490,000
Six hours later	*Animal well*	*Complete recovery*
Platelet count	2,040,000	1,060,000

The experiments given in Table 5 show the change in the platelet count in two rabbits which received 0.5 c.c. of horse serum. Each had been sensitized by an injection of horse serum, nine weeks previously. Rabbit B displayed marked symptoms of anaphylactic shock. The platelet count in this animal was reduced

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8. Gley: Compt. rend. Soc. de biol., 1896, iv, 44. Von Behring: Deutsch. med. Wchnschr., Oct. 15, 1914, xl, No. 42.

for a short time, and a slight tendency to clumping was observed. Rabbit A displayed little or no evidence of shock. The platelet count was actually increased. No clumping was observed.

The experiments given in Table 6 are reported for comparison with the preceding. In these experiments, varying doses of horse serum were given intravenously to unsensitized rabbits. The changes are small.

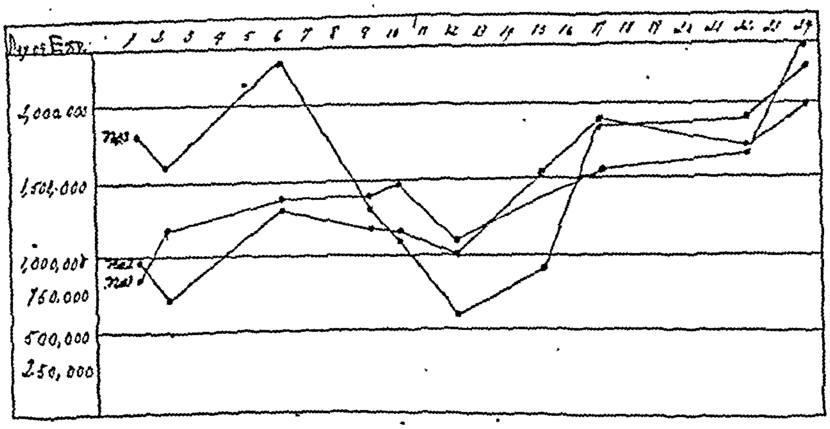

Chart 11.—Effect of a smaller dose of the Roentgen ray on the platelet count of three rabbits.

Other factors also modify the platelet count. Richardson[9] and others state that it is increased after hemorrhage. Kemp, Calhoun and Harris,[1] and Webb[10] find that it is increased by altitude. Rebaudi[11] reports a marked increase during pregnancy. Kemp, Calhoun and Harris state that it is higher in cold seasons than in warm seasons.

To conclude, it may be stated that evidently several factors play a part in modifying the platelet count in disease. This fact, however, does not conflict with a conclusion that, in many diseases, substances are formed which may act as either irritants or poisons to the platelet-forming organs, and, depending on the intensity of their action, may exert their influence either to increase the count or reduce it. If this conclusion is substantial, the apparently contradictory reports in the literature on platelet counts seem in reality harmonious.

CONCLUSIONS

It is believed that the experiments here reported may be employed to explain the behavior of the platelet count under pathologic conditions. Primarily, it may be stated that every agent with which the animals were treated, which exerted any marked influence on the platelet count, increased the count when small doses were used and reduced it when larger doses were given.

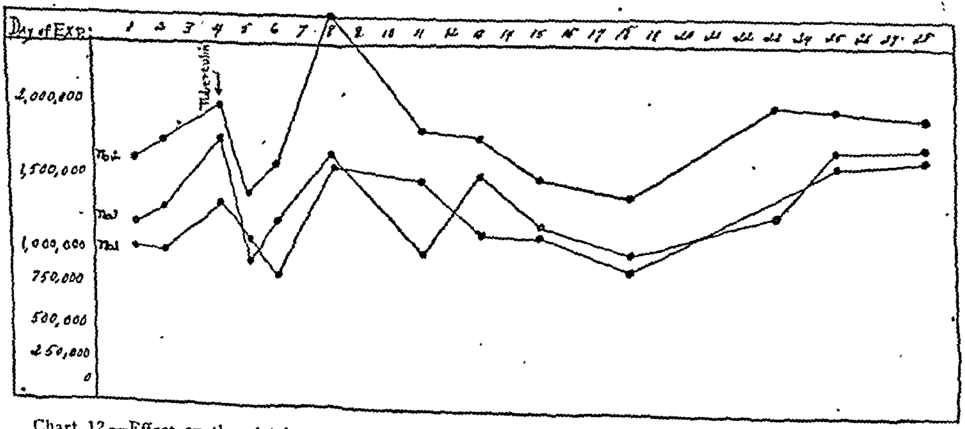

Chart 12.—Effect on the platelet count of 3 c.c. of Koch's old tuberculin given intravenously to three rabbits.

The agents employed were varied in nature, namely, diphtheria toxin, benzol, the Roentgen ray, killed typhoid bacilli and tuberculin. Tetanus toxin, in the dose used, had very little effect on the count. It is reasonable to conclude, I think, that the foregoing agents in the smaller doses acted as irritants to the platelet-forming organs, and in this way caused a rise in the platelet count. In larger doses they acted as poisons, or first as irritants and then as poisons, and caused thereby a fall in the count, or a rise followed by a fall.

The experimental data harmonize with observations on the platelet count in the clinical conditions thus far studied. For example, in a large number of counts made by the writer in diphtheria, tuberculosis and nephritis, both increased and reduced counts were observed. A review of the literature shows that in most diseases in which the platelet count is profoundly altered, both increased and reduced counts have been observed. In the light of the foregoing experiments, these clinical observations would not appear contradictory. It is believed that in almost every disease in which the number of platelets is markedly influenced by circulating toxins or poisons, the count may be either increased or reduced according to the intensity and duration of their toxic action on the bone marrow. It must be added here that, as has been mentioned in the text, the platelet count may be influenced also by other factors, such as altitude, hemorrhage, peptone poisoning, anaphylaxis, and also by *some* of the so-called diseases of the bone marrow.

TABLE 6.—EFFECT OF VARYING DOSES OF HORSE SERUM ON THE PLATELET COUNT IN RABBITS

	Rabbit 1	Rabbit 2	Rabbit 3
Normal count	2,000,000	1,450,000	1,450,000
Horse serum	0.001	1 c.c.	5 c.c.
One hour after injection	1,910,000	1,780,000	1,270,000
Twenty-four hours after injection	2,380,000	2,220,000	1,660,000

One other important generalization is possibly justified. In certain chronic diseases, tuberculosis and nephritis for example, *the* count is increased as a

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9. Richardson, F. L.: The Effect of Severe Hemorrhage on the Number of Blood Platelets in Blood from the Peripheral Circulation of Rabbits, Jour. Med. Research, 1904, viii, 99.

10. Webb, Gilbert and Havens: Blood Platelets: Some Studies in Connection with Altitude and Tuberculosis, Preliminary Report, Colorado Med. Jour., 1914.

11. Rebaudi: Blood Platelets During Pregnancy, Labor, Puerperium and Menstruation and in the New Born, Am. Jour. Obst., 1907, p. 475.

rule and reduced in rare instances only. In other diseases, diphtheria, pneumonia, and typhoid fever, for example, the findings are diametrically opposite; that is, the count is reduced as a rule and increased in rare instances. It is believed that in the former type of diseases (increased counts the rule), the platelet count is influenced by some mild irritant to the platelet-forming organs, such as killed typhoid bacilli or tuberculin, and that for this reason, an irritant effect is the rule, and a toxic effect, the result of an overwhelming dose, is not reached in the average case. In the latter type of disease (reduced counts the rule), the platelet count is believed to be influenced by some powerful *irritant to the marrow, such as* diphtheria toxin or benzol, so that the irritant dose is exceeded in the average case and a reduced count is the rule. The few cases showing an increased count are probably the milder ones in which the toxic dose is not reached.

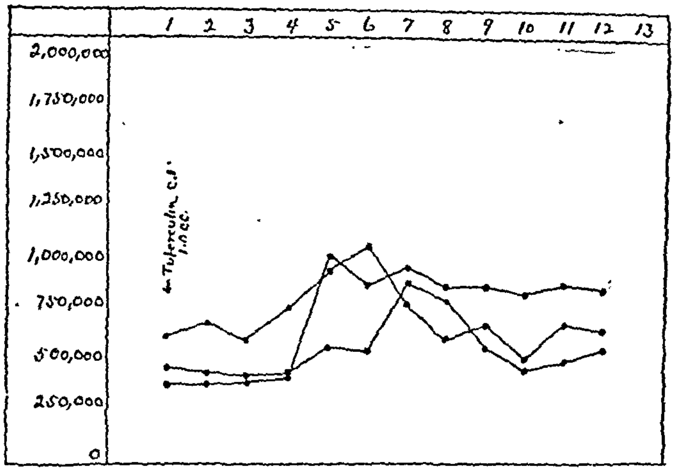

Chart 13.—Effect on the platelet count of 1 c.c. of Koch's old tuberculin given subcutaneously to three rabbits.

ABSTRACT OF DISCUSSION

Dr. Gerald B. Webb, Colorado Springs, Colo.: Dr. Duke's contribution is most welcome, inasmuch as blood platelets have been too little studied. In one case of miliary tuberculosis, and in one of a rapidly fatal tuberculosis following measles, we found the blood platelet count very low, whereas in almost every other case of tuberculosis both in human beings and in laboratory animals, we have found the numbers increased. Nature does not often increase elements without design. Thanks to Metchnikoff, we can now better understand the reason for a leukocytosis. More careful investigations should discover the reason for the increase, under certain conditions, of blood platelets. From our own experiments we have found that (1) blood platelets either contain or supply opsonin; (2) blood platelets are increased at a high altitude; (3) blood platelets can be increased by an artificial hyperemia of the marrow of long bones; (4) blood platelets are increased in carbon monoxid poisoning; (5) blood platelets appear to be increased in the early stages of measles; (6) blood platelets added to a minimum lethal dose of virulent tubercle bacilli do not constantly prevent infection.

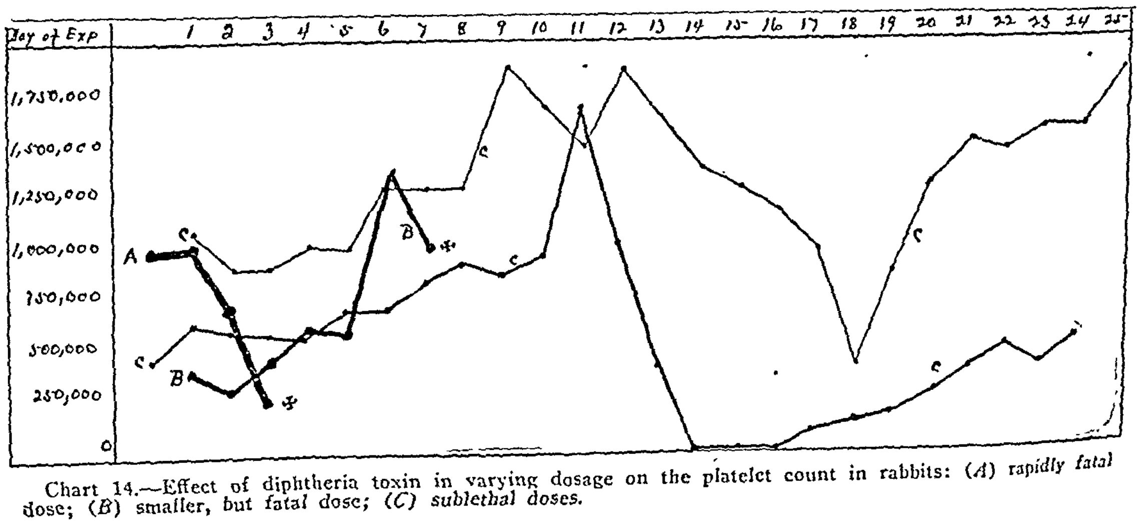

Chart 14.—Effect of diphtheria toxin in varying dosage on the platelet count in rabbits: (*A*) rapidly fatal dose; (*B*) smaller, but fatal dose; (*C*) sublethal doses.

Dr. S. H. Hurwitz, San Francisco: For a number of years investigators have been interested in the relationship existing between the formed elements of the blood and the factors of coagulation. Ever since the platelets were first recognized as distinct morphologic entities and not as disintegration products of leukocytes, the relationship of these elements to hemorrhagic diseases became a subject for investigation. Until recent years, however, we did not have methods available for studying the factors of coagulation and it was therefore difficult to find out what the relation of the formed elements of the blood to these factors was. At the present such studies have been made possible by the methods given us by Dr. Howell of Baltimore.

Stimulated by the observations on a patient with bleeding from the gums and purpura, with anemia and considerable reduction in the platelets, associated with a diminution in the circulating prothrombin, we attempted to reproduce this condition experimentally. Like Dr. Selling, we were able to produce by benzol injections in rabbits a picture of aplastic anemia with marked destruction of the marrow and a reduction in the formed elements, especially the leukocytes and blood plates. In some instances the blood platelets were reduced to 30,000 and associated with this drop there occurred a reduction in the circulating prothrombin. This observation is in harmony with the proof that blood platelets contain prothrombin, although it is unlikely that they are the only source of this factor. We were also able to follow the antithrombin and fibrinogen in these same animals. These two factors have been found to fluctuate little from the normal.

Dr. W. W. Duke, Kansas City, Mo.: The platelets surely must perform some very active function in the body, varying in number as they do under so many conditions. The observation of Dr. Webb that platelets contain opsonin is interesting indeed, and it would not be surprising if it were discovered that platelets play an active rôle in immunity. The observation of Dr. Hurwitz that blood in which the platelet count is reduced, contains less prothrombin than normal blood, is in line with what we might expect from the work of Morowitz and Bayne-Jones showing that platelets contain prothrombin. With these facts known, it is a little surprising to find that blood which is nearly free from platelets may clot with great rapidity. In a number of patients with purpura hemorrhagica and also in an animal with purpura hemorrhagica produced with diphtheria toxin, the platelet count varied from 10,000 to less than 1,000. The coagulation time of blood obtained from the ear was invariably normal. Platelets, without question, play an important rôle in stopping hemorrhage. It seems probable that they accomplish this through the rôle they play in the formation of thrombi. Platelets possess a property of rapidly adhering in masses to the wall of a blood vessel at points where the intima is injured, and these masses apparently form a nidus for the attachment of fibrin and the laying down of a thrombus. They do this, perhaps, by liberating their thrombin just at the point where it is most useful. Both platelets and fibrinogen seem necessary for the formation of thrombi, for if either is reduced nearly to a point of absence, bleeding from cuts is prolonged.

Dr. Webb's observation that the number of platelets may be increased by passive hyperemia is interesting and important. Dr. McKinley and I have tried this out in tuberculous patients at Dr. Webb's suggestion, and find as he did that the count can often be increased for a number of days in this way. It offers a very simple means for increasing the platelet count artificially. The Roentgen ray may be used in animals either for increasing or reducing the count. It is possible that some therapeutic application for this may be found.

THE INTESTINAL TRACT *

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Man's interest in the intestinal tract begins at birth and ends only with death. Through its long and tortuous canal pass the foods that supply the body, and here in its laboratory are carried on those complicated chemical and mechanical processes that allow these foods to be fitted for the use of the animal machine, and finally eject the unused portions. Anything interfering with any of these functions is a cause of discomfort, and even of death itself. Is it not natural, therefore, that those having the physical well-being of man in their care, should, from the earliest times, have sought to remedy bodily ills by medication applied to, or through, this channel, confidently hoping that all human disorders might thereby be cured. This hope and even belief still exists, filling the purse of the quack and "patent medicine" manufacturer, who today largely occupies the place of the sorcerer and medicine man of savage tribes.

Medication of some sort, then, was the only method for years, so far as we know, of treating the digestive tract. There were bold and not unskilful surgeons in the older civilizations, as witness the formidable operations on the skull and perhaps the brain, shown by the great number and variety of trephinings done with instruments of stone, found in Peru and elsewhere. These mummies and their bones have handed down their story through the centuries, and in them we can recognize the operative successes and failures as plainly as though these men were alive today, or perhaps on the necropsy table.

There is no such record, however, of operations on the intestinal tract; perhaps they were performed, but even in the mummy we find nothing to suggest it, though in the mummy have been found evidences of appendicitis. It is possible that in the prehistoric as well as in later days, torn or cut intestines protruding from a wound may have been sewed up and the patient cured.

The surgeon first operated on the beginning and the end of the intestinal tract, operations on the esophagus and rectum being done at a comparatively early date, but the peritoneal cavity was supposed to be such a dangerous region that few invaded it.

The real beginning of intestinal surgery was not more than fifty years ago, and step by step it has advanced until today there is not an inch of the canal or any of its appendages that has not been attacked. It may be well to briefly mention here some of the things that have already been accomplished.

Beginning with the esophagus, we find that the congenital or acquired malformations, like pouch, may be cured, sometimes by excision, sometimes without, strictures dilated, and malignant growths at least exposed to the view of the surgeon. Excision of such growths, however, is still in the early experimental stage and should not be attempted by the general surgeon. There is no organ more difficult to reach or more dangerous to operate on than the esophagus in the thorax. Some day, let us hope in the not distant future, excision of esophageal growths will be one of the recognized surgical procedures.

Certain surgeons who have had large experience in thoracic work, experienced in the technic of differential pressure, either by the use of the cabinet, or with intratracheal anesthesia, are working and experimenting in this field, and excision of the esophagus, in man, should be left in their hands for the present—enough has already been accomplished to show the probability of future success.

The stomach is certainly a most tolerant organ. For years it is generally either starved or overfed. It must receive and take care of all kinds of substances from milk to clay. It is tanned with tea, irritated by alcohol, tortured by drugs, alternately scalded and chilled, and yet it works on, doing its best though receiving the blame which should fall on its owner or the other organs. Some people complain of their "bad stomachs" all their lives, while in reality the poor thing is not at fault and is doing its best. Its great failing is that it is too sympathetic, reflecting the troubles of its neighbors.

It is also abused surgically without showing resentment. Being by nature a cleanly organ and not infested with the dangerous fauna and flora of the lower intestine, it is operated on with comparative impunity. Were this not true, the daily mortality from operative procedures, some good, some indifferent and many bad, would be enormous. It is cut into and cut out, it is stitched into faulty positions, puckered and drained, properly or improperly, but still the patient survives. Formerly, the would-be surgeon, just out of the medical school, began his operative experiments by amputating a breast, one of the most difficult of operations, by the way, if properly done, but now he is not satisfied until he has done something to a stomach.

In 1881 it was my great privilege to see Billroth do the first successful resection of the pylorus—that was really the beginning of gastric surgery as we know it today. Step by step it has advanced, until now there are few more brilliant results to be obtained by the skilful and judicious operator than in this field. Men are saved from years of suffering, invalidism and death itself by the surgeon who knows his business.

The question of the treatment of malignant disease of the stomach has been pretty thoroughly settled in the surgical mind, radical excision in early cases giving a fair percentage of cure with slight operative mortality. Excision of chronic ulcers is an accepted fact, and operations for pyloric stenosis, whether by the Finney operation or by gastro-enterostomy, give brilliant results. Duodenal ulcer has become a surgical disease in a great measure, the only question in the

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

choice of operation being that of excision or nonexcision of the affected area. In passing, mention should be made of the importance of a thorough examination of the gallbladder in all cases in which an operation is being done for pain or other symptoms in the right upper quadrant. We have all been disappointed after an apparently successful operation for well-marked duodenal ulcer to find on second operation that the symptoms were partly due to an inflamed "strawberry" gallbladder, or small, previously unrecognized, gallstones.

Having spoken of the gallbladder, whose troubles so closely resemble those of the intestinal tract itself, and for which they are often mistaken, I cannot forbear to touch on a question that has always interested me, namely, shall it be excision or drainage in cholecystitis. For years I advocated and practiced excision in the large majority of cases, until, persuaded by surgeons of larger experience than mine, I adopted drainage for a time, only to return with greater zeal to excision, feeling sure that my ultimate results would be better. The greater mortality of cholecystectomy is due, I am sure, to the fact that it has been done in the severer cases that could only be cured in that way. There is, however, no doubt that in inexperienced hands cholecystostomy is safer, and under such circumstances should be the operation of choice. Many of my former advisers today excise in a large proportion of their cases.

It should be borne in mind that in certain desperate cases of large perforations of the duodenum, when the condition of the patient is so bad that a prolonged operation will not be tolerated, simple drainage with gauze or a large tube, with no attempt at closure of the opening, will often save the patient's life, and the resulting fistula may close of its own accord.

With the small intestine the surgeon has less to do. Occasionally tumors are met, intussusception being one of the common ways of first disclosing their presence, but we may have that rare type of malignant growth, a lymphoid tumor, which may have become generalized before symptoms have called attention to its presence. Adhesions or kinks from acute inflammation are the chief source of danger in this region, and in acute obstructions above the cecum the question of gallstone ileus is always to be borne in mind.

Near the ileocecal valve, congenital or acquired peritoneal folds (the so-called Lane's kink), should always be looked for in operations in this region, for in the past many of the unsuccessful attempts to cure attacks of supposed chronic appendicitis were due to the failure to recognize this very common condition, which is so often the cause of severe ileal stasis.

And now we come to that much abused and vicious organ, the appendix. Probably more necessary operations on the appendix have been left undone, and more unnecessary operations have been done on it, than on any other organ in the body. The first symptoms of inflammation should be a reason for its removal, but too often are these symptoms mistaken. The retrocecal perforation of the appendix is often unrecognized until a rupture of the abscess causes a diffuse peritoneal infection, or, on the other hand, the innocent appendix is removed, and the offending fallopian tube, ureteral stone, gallbladder or Lane's kink is left behind. The surgeon should be careful and conservative in his diagnosis of the appendiceal trouble and radical in his treatment. It must always be remembered that the stomach is often blamed for trouble that really exists in the appendix.

The large intestine has been a fruitful field for much heated discussion and surgical adventure of late. Since the advent of the Roentgen ray, much has been learned and many mistakes have been made. It is safe to say that the old ideas of the positions of the abdominal viscera have undergone a great change in the last few years. Their positions and shapes are becoming better known, and what a short time ago were considered malpositions or malformations are now known to be but slight variations from the normal, if there is such a thing as a normal arrangement. The large intestine is a marked example of this rule; it never lies in the regular lines and curves as shown in the diagrams of the old anatomist. There are innumerable variations, due to congenital or acquired folds of the peritoneum, and many have too quickly decided that anything unusual must be a serious physical defect, and the cause of certain trains of symptoms. The rules for the treatment of malignant disease are well recognized, but it is in questions of abdominal plumbing, if we may use the term, that opinions differ most widely. Fecal stasis is recognized as an evil, and many operations have been designed and performed for its relief that are useless or do positive harm. The surgeon who looks on every such case as one whose faulty plumbing must be restored mechanically to a diagrammatic form is sure to make mistakes, having overlooked the real source of the trouble. Ptosis does not, or should not, always mean operation.

The interrelation of fecal stasis and the neuroses and autointoxications of all kinds are subjects that require further investigation and study, though day by day and year by year our knowledge is steadily advancing. The medical clinician, the neurologist, the psychologist, the bacteriologist must each do his part, and they should be aided, not overshadowed by the roentgenologist, whose mechanical findings may so often be misinterpreted. Viewed from the standpoint of any one of these, the observer sees but one part of the composite picture.

The relation of intestinal abnormalities and distortions to mental disease has always interested me. It is certainly a suggestive fact that a considerable number of cases of megacolon and giant sigmoid are seen in insane asylums. I have, by an operation for acute volvulus in such a case, restored a man to a normal mental condition, after he had been a frequent inmate of the asylum for a considerable number of years. In all these cases of suspected faulty plumbing, it is generally harder to decide which individual needs to be operated on and just which form of operation should be chosen, than to do the mechanical part of the operation itself. With the abdomen open before us it is not always easy to decide which fold or which adhesion is at fault, whether the intestine can be sidetracked or whether it needs excision, and all these factors enter into the subsequent cure or failure. The intestine is not a simple pipe that can be cut and soldered, or placed in what is considered the proper position and kept there, but it is a thin-walled affair in constant motion, always expanding or contracting, and changing its position with the position of the patient and the load it has to bear. We are apt to see only the collapsed intestine on the operating table and cannot picture to ourselves that same intestine distended, partially paralyzed after operation, and carrying its load of gas and fecal matter later. What we know already has been learned at the cost of many failures, and greater future knowledge must come from earnest, careful investigation and honest observation and study of the subsequent history of each individual case. We must try to find out why one case is a success and another, treated in the same manner, is a dismal failure. We must endeavor to recognize those bands or adhesions about the intestine which are of importance in operation and those that are unimportant. The less traumatism to which we subject the peritoneum the better.

We do not know why certain simple operations are followed by extensive and firm adhesions, while others much more extensive, or in the presence of sepsis, are free from these dangerous results. Gentleness in manipulation, and wet gauze instead of dry, leaving as few raw surfaces as possible, probably help. It is assuredly a fact that adhesions may in many cases be divided, and large raw surfaces left, without the formation of new, or the reformation of old adhesions. Until we understand the reason for this and the correct method to be followed to avoid them, we can never be sure of our ultimate results.

Great advances in the treatment of intestinal stasis have been made of late and many patients saved and made useful citizens by suitable operation on the large intestine, but cases should be carefully studied and selected before operating.

The large intestine is more frequently the seat of obstruction than any other part of the tract. An operation, to prove successful, should always be done early, and the cardinal rule is not to attempt too much, and an anastomosis or the temporary artificial anus will save many lives when the primary resection will prove fatal. Excision of a growth may be done later with much greater safety, and the removal of the disease, if it is malignant, can be much more radical. Never leave a patient with an artificial anus without his full knowledge of what it means, and his consent.

Diverticulis is one of the affections of the large intestine that is not infrequently met, and the choice of operation, or even of no operation, is often difficult. When there is a perforation there is of course no question, the abdomen must be opened and the abscess drained the same as an appendix abscess. We sometimes mistake the chronic or subacute cases for malignant disease and do a resection, our mistake in diagnosis being discovered only by the pathologist.

One meets undoubted cases of diverticulitis with recurring symptoms. These cases, as a rule, are relieved though not cured by thorough lavage. What are we to do in such cases? We know that the presence of the pathologic condition is a menace to the health and life of the patient and may be the starting point of malignant disease. On general principles we should remove the offending region, as we would remove a chronic appendix, but the operation is not a safe one and the mortality must be high, especially in those cases in which the lower end of a short sigmoid is involved.

The modern operation for cancer of the rectum gives such good results that radical extirpation should always be attempted in suitable cases.

Up to this point I have considered only the more important operations on the intestinal tract and their advisability, but now comes a more serious question—by whom shall these operations be performed? This applies to all surgery, but particularly to intestinal work, for any man who begins his experiments on man attains final success only at the expense of many lives and much unnecessary suffering. No man should ever attempt a serious operation until he has had a thorough training under a good master.

Throughout the country have sprung up thousands of small hospitals which mark a tremendous advance in the cause of human welfare, and in which is done an enormous amount of surgery, good and bad. In many of these hospitals the staff consists of all the reputable physicians in the town; in other words, any man who holds a degree, whatever his surgical experience, can send his patients there and operate on them. Many of these men have had no suitable training and their work can be imagined, but it is seldom described. The establishment of the American College of Surgeons is a step in the right direction, but only a step. It is perhaps impossible at present, but in time the rule may be made that no man shall practice surgery until he has served a term as an intern at some good hospital and has had a chance to observe and assist competent operators.

Medical education is constantly advancing, and greater efficiency is the aim always before us. At present, large numbers of practitioners, young and old, visit the different famous surgical clinics of the country, and then go home and try to repeat the operations that they have seen performed so easily by the master hand. Such observation and experience, to the man not properly trained, only renders him more dangerous to the community in which he lives. For intestinal work especially, it is unusually dangerous for a man to operate on a human being until he has performed many operations on living animals. Until he has the necessary skill and technic, he is bound, unless possessed of unusual ability, or more often luck, to have many failures, and a failure means a human life.

A witness before a parliamentary committee in England once said: "Gentlemen, with or without the sanction of the law, vivisection must and will continue, surgery cannot stand still, and is it not better that vivisection be done on the lower animals rather than on you, your wives or your children?"

I once assisted a famous surgeon who was performing his first intestinal anastomosis, in the days of Senn's plates. I suggested that his first knot was not drawn tightly enough, but he was sure it was all right. At necropsy he found that he was wrong; had he operated on animals before operating on a man the result would probably have been different. One cannot do these things by seeing them or reading about them. We all make mistakes enough; let us not add to these, unnecessary ones for want of proper preparation.

American surgery today is in the foremost rank, but let us not be content with that; a famous future can be ours, but it must be achieved by constant work and study. The standard must be raised still higher and surgeons must be trained more thoroughly for their work; graduate schools of surgery, large clinics where men can live and work long enough to acquire some of the art and skill of the master, more operations on the lower animals, both in the medical school and hospital laboratories, and greater observation and practice in the after-treatment of surgical cases, all these must be within the reach of the would-be surgeon. Technical skill in the surgeon is important, but of greater importance is surgical judgment. Many a man is, or can become, a skilful operator, but he needs to be something more. In operations on the intestinal tract, often more depends on knowing when to operate and what to do, than in any other part of the body. Of what advantage is it to the patient that a successful excision of the large intestine, for instance, or an anastomosis to side track it be done, if it does not improve his condition, having been performed when it was useless or unnecessary. The man of sound surgical judgment will save more lives and benefit humanity more, even though he be clumsy, than the man who is quick and dexterous but devoid of that essential requirement. The ideal surgeon possesses both qualities, and it should be the aim of every man who claims to be a surgeon, to perfect himself in every side of his art. Much has been written about intestinal surgery, but there are many problems yet unsolved, and it is the trained surgeon who must find the solution.

This subject is a live one which is being carefully studied and worked over. There is still work ahead, for no question that is open to discussion can be considered as settled.

180 Marlboro Street.

CHENOPODIUM IN THE TREATMENT OF UNCINARIASIS

PRELIMINARY REPORT

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In an article on the treatment of uncinariasis with the oil of chenopodium, Levy[1] has reported a number of cases in which he has had excellent results, and has given a detailed account concerning the toxicity of the drug, assuring us of the little danger connected with its administration. His article appeared subsequently to a thorough report of 1,457 cases presented by Schneffner and Vervoort in which results were sought comparatively with other vermifuges, and the following percentages of comparative efficiency were presented: oil of eucalyptus, 38; betanaphthol, 68; thymol, 83; oil of chenopodium, 91.

At the present time, there is perhaps not a field in existence better given for further investigation in lines of hookworm and other parasite therapy than Santo Tomas Hospital. Its location is tropical; its patients (numbering seldom less than 500) are drawn from many nationalities, among which the native poor Panamanians and the West Indian negroes chiefly predominate, and extremely poor sanitary conditions unfavorable to hookworm extermination still exist throughout the interior of the Republic of Panama.

The West Indian negroes mentioned are those poor discharged laborers from the Canal Commission whom Panama still harbors within her boundaries, and many of these, not able to obtain employment, live in the interior of the republic in the most deplorable poverty — shoes, as with most of the Panamanians living in the interior, being a luxury not often possessed by them. Both of these peoples, with few exceptions, when the cause and nature of their maladies and the measures necessary to produce a cure have been fully explained in simple language, will in most instances yield honestly and cooperate with the physician. With the chenopodium treatment it was far easier to accomplish this than with thymol, because of the simpler method of its administration, and the less drastic results following its ingestion. The oil is put up in capsules of 8 minims each, and we have administered two capsules to the dose, including three doses to the treatment, given two hours apart. Each treatment was followed in four hours by 2 ounces of castor oil. In the plan of the treatment laid down and recommended by Dr. Levy in his article, 50 minims of chloroform were added to the castor oil for the purpose of enhancing the efficiency of the vermifuge; but in the form of treatment which we adopted and followed throughout, we purposely omitted this, intending thereby to give the drug under investigation a fairer trial.

In contrast, the accepted routine treatment of uncinariasis with thymol at Ancon and Santo Tomas Hospitals is as follows: At 4 p. m. calomel is given, the supper is restricted to liquids, and at 8 p. m. 2 ounces of magnesium sulphate are administered. The following morning the patient receives 60 grains of thymol in three doses of 20 grains each at the hours of 4, 5 and 6, respectively, and at 9 o'clock 2 ounces of magnesium sulphate, the diet being resumed at noon if the bowels have moved well.

The dosage of both chenopodium and thymol, in the treatments outlined, is that for adults; we have followed Young's rule in the treatment of children. It may be safe to say, however, that 1 drop of the oil of chenopodium may be given for every year of the child's age, and that this dose should be repeated twice, two hours apart, and followed by oil to constitute a treatment as hereinbefore outlined. The oil can well be given to children with sugar.

It must be evident to all who have had experience in the treatment of uncinariasis that such a method of administering a vermifuge, provided it be *efficient,* is to be preferred. It is attended with much less inconvenience and discomfort to the patient than with thymol, there being no dietetic restrictions and no excessive purging. The matter of dietetic restrictions insisted on by others has been in our experience entirely unnecessary with chenopodium, the oil being given at night merely to facilitate obtaining and examining morning specimens.

The treatment of hookworm disease, and any determination of a removal of infection with either thymol or chenopodium necessarily are expensive from several standpoints: First there is the cost of the drug: Here there is no great variation between the two. The Health Department of the Isthmus pays $2.40 a pound for thymol. Sixty grains constitute one treatment. Levy gives jobbers' prices in the States as from $2.50 to $3 a pound for chenopodium. A treatment consists of 48 minims, but it will be proved later that the average case requires fewer treatments to constitute a cure with chenopodium than with thymol. The other important consideration is the length of time required to effect a cure. In that a great many cases of uncinariasis require several courses of treatment to overcome the infection, it is obvious that the sooner courses of treatment can be repeated, the sooner can the patient be discharged

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[1] Levy, R. L.: Oil of Chenopodium in the Treatment of Hookworm [illegible] 1914, p. 1946.

With thymol the effects of [illegible] the drug on the patient practically [illegible] in less than five or six days. With chenopodium we have often repeated treatments at intervals of three days, and we have never seen the prostration and weakness which is often occasioned by thymol.

The oil of chenopodium is not a new drug. Hare states that the oil is distilled from the fruit of the *Chenopodium ambrosioides*, or American worm-seed, and that its anthelmintic properties have long been known in the treatment of ascariasis. Levy has dealt with great detail in the pharmacology and chemistry of the drug, but as far as we are able to ascertain, no active principle has been isolated therefrom. It is claimed for the drug that it acts as a paralysant on the parasite, causing it to loosen its hold on the intestinal mucosa, enabling the purge to sweep the worms from the intestine.

As concerns the toxicology of the drug, Levy has surveyed the literature on the subject and has collected twelve authentic cases of poisoning, nine of which ended fatally and seven received an overdose. One of his conclusions is that "in therapeutic doses it is nontoxic." In the 108 cases in which we have administered this oil thus far, we have never encountered any manifestations of toxicity. Of the twelve cases mentioned by Levy, eight occurred in children under the age of 13. While most of our experience has been with adults, we have thus far definite record of six cases in children of ages ranging from 3 to 14 years, and none of these have ever shown any ill effects from the drug.

Believing in the nontoxicity of the drug, we have not hesitated administering it to all patients regardless of other conditions, with the exceptions of those suffering from hyperpyrexia and acute inflammations of the gastro-intestinal tract. Accordingly, during the course of treatments, we have had some deaths, all of which went to necropsy and, as will be seen, in none of these, despite careful investigation, were there any evidences of chenopodium poisoning being a factor in the cause of death.

Our methods of observation of treatments administered were as follows: The stool specimen having been microscopically examined and found positive for uncinariae, the hemoglobin was taken, and the first chenopodium treatment given, after which the first whole stool obtained following the administration of castor oil was washed and examined and the hookworms counted in order to determine, in a measure, the success of the therapeutic procedures applied. Then for five successive days a stool specimen from the patient was examined microscopically every morning, and at the end of this time the chenopodium treatment was repeated. If during the examination of these morning specimens one of the first was found to be positive, we frequently repeated the treatment before the series of five was completed. And so we continued, repeating the treatment as long as any one of the specimens showed even as much as a single hookworm egg, and also keeping count of the worms expelled after each treatment. Some there were who received in accordance with this, our routine course of therapy, as many as seven and eight such courses of treatment; and some of these patients, needless to say, yielded very reluctantly to further treatment after the fifth or sixth administration of their medication. In some, though probably not more than two or three, the patients absolutely refused more treatment, and their records unfortunately could not be completed. Our requirements for a cure were, that all morning specimens for at least five or six or more successive days must be negative for uncinaria eggs, and then the treatment having been repeated, the whole stool must be negative for hookworms. After this the hemoglobin was again taken and compared with the first reading. We have had occasion to examine the stools of patients thus treated and considered cured by us, as long as two and three months after the prescribed course of treatment had been completed, and found that the stools were still negative for uncinariae. The hemoglobin estimation also showed a distinct rise in these patients from the time of their cure.

In our series of treatments we also included a number of patients treated with thymol, just as an approximate comparison and with no intention of establishing any definite ratio between the two drugs for, as already stated, this feature of percentage efficiency among vermifuges has already been more or less definitely determined. In a few cases we have also followed thymol treatments by chenopodium, and accordingly have also followed chenopodium by thymol treatments, but this being only a preliminary report, our observations thus far have not been extensive in this respect.

To date we have records of treatment in 168 cases of hookworm disease of both the Old and New World varieties. Thus far we have administered oil of chenopodium to 108 patients, and of these, ninety-two received throughout their treatments chenopodium alone, the remainder having been given alternate treatments of chenopodium and thymol or thymol alone.

With the desire to ascertain approximately the efficiency of chenopodium as a vermifuge in uncinariasis, it was necessary to adopt some method of comparison with thymol, the accepted anthelmintic for this condition. We decided that as good an indicator as any would be a comparison of the average number of hookworms expelled in the first whole stool from equal numbers of unselected and previously untreated cases. The cases in which thymol was given and the first whole stool obtained were sixty, and the average number of hookworms expelled was seventy-six. The first sixty cases treated with chenopodium gave an average of ninety-nine hookworms. Among more recent treatments there have been so much better results that the average of ninety-nine in the first sixty chenopodium cases has increased to 131 in ninety cases. In one instance there were expelled 1,379 uncinariae in a first whole stool.

It was impossible at times to complete courses of treatment instituted for various reasons, such as the patient demanding his discharge, intervening death, or inability to obtain the whole stools, often because of the patient's failure to cooperate. The number of cases at the present time, in which we consider our records complete and the patient as cured, total twenty-four in which thymol only was given, and thirty-five for chenopodium. It will be interesting to note the average number of treatments which each drug required to effect a complete cure, according to our standard as stated above. In the twenty-four instances of a cure with thymol, forty-nine courses of the drug were required to obtain the results. In the first twenty-four cures with chenopodium, only thirty courses were required, and for the total of thirty-five cures, forty-two treatments were needed.

Since beginning this work with uncinariasis, the opinion has grown with us that the oil of chenopodium is a vermifuge which will act more quickly and more efficiently than thymol. The comparison of the number of courses necessary to effect cures with the two drugs, we believe, shows this to be true. Desirous of testing the action of the drug further, we decided to alternate them in the same case. As yet the number of these trials is too few to furnish statistics, or do more than suggest that further investigation will confirm our supposition.

Case 1.—The patient received thymol, after which the first whole stool was negative. Several days later a chenopodium treatment caused the expulsion of seven hookworms in the first whole stool following.

Case 2.—Whole stool after thymol showed twenty-nine hookworms. A week later chenopodium expelled forty-eight hookworms. A second chenopodium treatment gave a negative result.

Case 3.—Thymol whole stool was negative. Chenopodium a few days later expelled eleven hookworms. The next chenopodium treatment was followed by negative whole stool.

Case 4.—Thirteen worms were expelled by chenopodium following a negative result from a thymol treatment.

Case 5.—First thymol result showed seventeen hookworms, after which the third daily stool specimen showed ova. Thymol was repeated with a negative result, after which the fifth morning specimen again showed ova. Thymol was again given with a negative result. Then chenopodium was given; six hookworms were expelled, and five successive morning specimens were negative for ova.

In the many instances in which chenopodium was primarily given, and thymol subsequently administered, the thymol results never exceeded those of the preceding chenopodium treatments.

Most of our patients were admitted to the hospital with conditions other than simply uncinariasis, this infection being discovered through the routine stool examination of all new patients. Some of these patients, dying of the accompanying diseases, gave us the opportunity of observing at necropsy the absolute results of our treatments, and we will cite the following cases in this respect:

Case 6.—The patient had been given three thymol treatments in which the whole stool results were not observed. At this time he was very anemic, and the ova still persisted in the stool. He was then given chenopodium treatment, but the whole first stool was missed. This was followed by five successive negative morning specimens, and the chenopodium treatment was repeated with the result that twenty-five uncinariae were expelled. The hemoglobin was 20 per cent. at the time of beginning the chenopodium treatments. At necropsy the small intestine, especially the duodenum and down near the cecum, were literally filled with hookworms, which were embedded deeply in the mucosa of the valvulae conniventes. All organs were extremely anemic. Nothing else was found to be abnormal save for a chronic nephritis which was not very severe, and a mild bronchopneumonia, probably terminal. The cause of death was attributed to hookworm disease with secondary anemia. The patient died on the day following the last chenopodium treatment.

Case 7.—The patient received two chenopodium treatments with expulsion of but one hookworm. Four morning specimens were negative. The patient died some time after treatment, the cause of death being septic endocarditis, the patient having not received treatment during the time of persistent fever. At necropsy, the intestine was entirely free from hookworms. The septic endocarditis had most probably developed after this treatment had been begun.

Case 8.—The patient was tuberculous. Chenopodium expelled fourteen uncinariae. Five daily stool specimens and the second chenopodium treatment gave a negative result. We had considered him, therefore, cured of uncinariasis. Necropsy, some time later, showed pulmonary tuberculosis as the cause of death. Although the intestine showed two large diverticula and many small ones in the ileum and jejunum (the two large ones being in the jejunum), no uncinariae were found anywhere.

Case 9.—Eighty-seven hookworms were expelled after the first chenopodium treatment, and five successive stools were negative. A second chenopodium treatment expelled two uncinariae. Necropsy revealed, as the cause of death, general septicemia, with ulcers of the leg as a primary focus. Here also the intestinal tract was free from hookworms.

Case 10.—Boy. Hemoglobin was 10 per cent., with no increase during treatment or during stay in hospital. A first thymol treatment expelled twenty-nine uncinariae, and a subsequent chenopodium treatment, forty-eight uncinariae. A second chenopodium treatment was negative. Necropsy showed a complete removal of the parasite and gave the cause of death as congenital syphilis.

Chenopodium has long held a place in the pharmacopeia, being employed chiefly as a vermifuge in ascariasis. In many of our hookworm cases, several other types of intestinal parasites were also present, and our experience has confirmed its efficiency in roundworm infections but absolutely no effect on *Strongyloides intestinalis*, *Trichocephalus dispar* or trichomonads was noted, these parasites often persisting after many treatments. With the *Balantidium coli* the data are too limited to permit conclusions, as this infection is not very common.

That hookworm infections are sometimes very stubborn and resistant to all treatments is illustrated in the following cases:

Case 11.—The patient received thymol and expelled eleven hookworms, but the following specimens contained ova. Chenopodium was then given, but the whole stool was not received; the following specimens contained ova. The third treatment consisted of chenopodium, and gave a negative result. The fourth treatment was also chenopodium and was negative, but stool specimens were still positive. The fifth treatment of chenopodium was negative. The sixth treatment consisted of thymol, and gave also a negative result. The seventh and eighth treatments were with chenopodium, and similarly gave negative results, after which specimens were still positive, and the patient demanded his discharge.

Case 12.—Thymol case. Seven courses of treatment were required before a cure was effected.

Case 13.—Thymol case. Six treatments established a cure.

Case 14.—Hemoglobin was 43 per cent. Uncinariae and ascarides were present in the first specimen. The first treatment with chenopodium expelled 552 uncinariae and eleven roundworms. Positive specimens followed. The second treatment with chenopodium expelled ten uncinariae, and still positive specimens persisted. Four uncinariae were expelled after the third chenopodium treatment (at this time the hemoglobin had risen to 52 per cent.). Five negative specimens followed. The fourth chenopodium treatment gave a negative result. It will be interesting to note that ten days later, uncinaria ova again appeared in the stool, and a fifth chenopodium treatment was given, causing the expulsion of 120 hookworms and one roundworm. The sixth treatm consisted of thymol, and a negative result followed. six successive morning specimens were negative. (Th was here introduced because our supply of chenopo became exhausted.) The hemoglobin had risen to 85 per c Two stool specimens examined five and six weeks later w still negative.

Case 15.—Hemoglobin was 18 per cent. The first treat of chenopodium expelled 1,379 hookworms. The second ment of chenopodium expelled 1,304 hookworms. The result of the third chenopodium treatment, unfortunately, was not received. The fourth treatment, consisting of thymol, expelled thirty-five uncinariae. The fifth treatment of thymol gave a negative result. (Hemoglobin at this time was 27 per cent.) The sixth treatment of thymol expelled two uncinariae. The seventh treatment of thymol expelled two uncinariae. After this there were six negative specimens, followed by a negative chenopodium treatment. (Hemoglobin now had risen to 61 per cent., and the patient's entire appearance was wonderfully improved.) This total of 2,722 hookworms in one patient is the heaviest infection we have ever encountered, with the possible exception of the case cited above which we examined at necropsy.

Such resistant cases, however, are rather the exception than the rule, and in many instances a rapid and permanent cure was obtained. The following cases illustrate some of the gratifying results which attend the successful treatment of hookworm disease with chenopodium:

CASES 16-18.—The patients were a mother, aged 33, with two children, aged 3 and 6, respectively. The hemoglobin was: mother, 32 per cent.; younger child, 50 per cent.; older child, 48 per cent. The stools of all were positive for uncinaria ova, and all received chenopodium treatment, after which the mother expelled 201 hookworms and one roundworm; the younger child expelled sixty hookworms, and the older child expelled twenty-two hookworms. A second treatment with chenopodium gave the following results: The mother expelled twenty-five uncinariae; the younger child expelled ten uncinariae, and the older child expelled nineteen uncinariae. A third chenopodium treatment gave negative results in all three cases. The hemoglobin tests at this time were as follows: the mother, 55 per cent.; the younger child, 60 per cent.; the older child, 68 per cent. Six weeks later, two separate stool specimens were examined from each, and all of these were negative. The hemoglobin tests at this time were as follows: the mother, 74 per cent.; the younger child, 102 per cent.; the older child, 100 per cent.

In all of our hemoglobin tests, the same instrument (a Dare hemoglobinometer) was used.

SUMMARY

1. The method of administration of chenopodium is simple, and is attended with less inconvenience and discomfort to the patient than with thymol. This would give the drug an important place in the field work in uncinariasis.

2. Chenopodium can be given at shorter intervals than can thymol, and a cure can thereby be more quickly established, which gives it a greater economic value.

3. Chenopodium is nontoxic in therapeutic doses.

4. Chenopodium is a more efficient vermifuge than thymol in the treatment of uncinariasis.

Equality Not Biological.—"All men are born free and equal," it is asserted, but *such equality* is political only. It can not be biological. In every race are certain strains having capacities not attainable by the *mass*. There should be equality of start, equality before the law, but there will always be differences of attainment. The *gifts* of potentiality, unit characters of the germ-plasm, are *not shared* by all people of the same race. The average status of one may be below that of another, and the highest possibilities of one type may be greater than that of another. In general, the highest range of possibilities in every field has been reached by the "blonde races" of Europe. Groups of less *individual* or of less aggregate achievement may properly be regarded as "lower."—David Starr Jordan in *Popular Science Monthly*.

CREATIN AND CREATININ EXCRETION DURING THE PUERPERIUM AND THEIR RELATION TO THE INVOLUTION OF THE UTERUS *

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The retrogressive changes which follow pregnancy restore the mother's body approximately to the condition which existed before conception took place. The restorative process, as it affects the uterus, includes an autolytic phenomenon known as involution, which rapidly reduces the weight of the organ from about a kilogram to 50 or 60 gm. Histologically, the decrease in mass depends on the atrophy of the muscle cells forming the walls of the uterus, and the metabolic end-products which thus arise are eliminated in the urine.

Since it is generally admitted that following labor catabolic changes predominate in the metabolism of the uterine muscle cells, it seemed reasonable to suppose that this fact explained the presence of creatin and of a relatively large amount of creatinin in the urine of puerperal women. Indeed, the anatomic and physiologic facts regarding the involution of the uterus accorded so satisfactorily with the urine findings that for a long time no one challenged the hypothesis which held that the one was the cause of the other. Lately, however, Mellanby[1] has questioned this doctrine and declares as his opinion that activity of the breasts is fundamentally concerned with the excretion of creatin. It was this uncertainty regarding the part played by the involution process which led us to accept the opportunity to study several patients whose metabolism promised to throw additional light on the problem.

Our conclusions are based on the observations of four types of cases, namely, (1) a normal labor; (2) a conservative cesarean section at the end of normal pregnancy; (3) a conservative cesarean section in a case of pre-eclamptic toxemia, and (4) two cases of cesarean section with removal of the uterus. A material so varied has enabled us to learn in the first place that the creatin and creatinin metabolism is practically identical after normal labor and after cesarean section, provided the uterus is not removed, and the pregnancy has not been complicated by a toxemia. And, in the second place, we have been able to compare the excretion of these substances in cases in which the uterus was undergoing involution with others in which the uterus had been extirpated.

With two exceptions all the patients were the subjects of metabolic observations during pregnancy, but the results to be reported in this communication relate exclusively to the puerperium. The observations were continued without interruption for a period of two weeks or more after the delivery. The diet was creatinin and creatin-free. The urine was obtained by catheterization as long as there was risk of contamination from the vaginal discharge. It was collected over twenty-four-hour periods, was preserved with chloroform and analyzed daily. All determinations were made in duplicate. The total nitrogen was estimated by the Kjeldahl method; the creatinin and creatin by the Folin method.

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* From the Woman's Clinic, University of California Hospital.

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association San Francisco, June, 1915.

[1] Mellanby: The Metabolism of Lactating Women, Proc. Royal Soc., London, Series B, 1913, lxxxvi, 88.

The results of the Kjeldahl determinations indicate a notably smaller output of nitrogen in case hysterectomy was performed. This phenomenon has been previously observed by Slemons,[2] who demonstrated that during acute puerperal involution the average daily nitrogen excretion attributable to uterine autolysis varied between 2 and 3 gm.

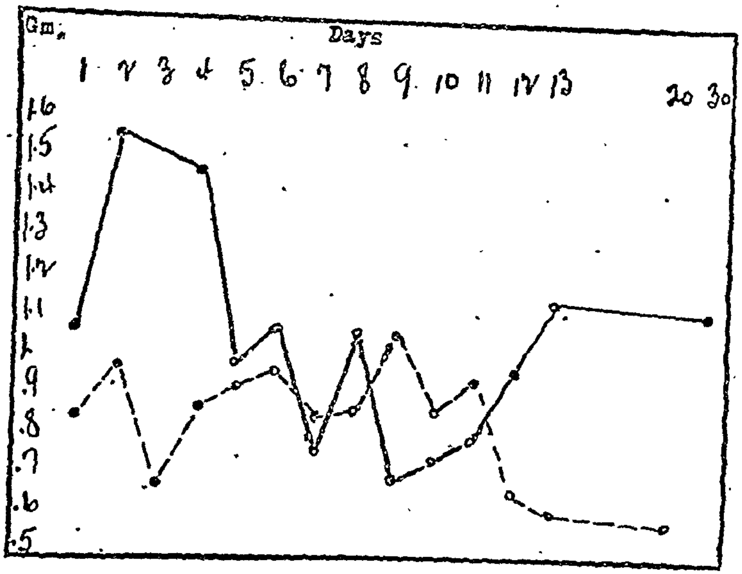

Chart 1.—Contrasting the preformed creatinin of the urine after conservative cesarean section and after the Porro operation. Solid line represents the excretion in the case in which the uterus was not removed; broken line that of the case in which it was removed.

In its behavior the creatinin elimination resembles that of total nitrogen; larger amounts are excreted in case the uterus is undergoing involution. In Chart 1 the creatinin excretion of two patients is illustrated. In both cesarean section had been performed, but in one the uterus was removed and in the other not. During the first thirteen days of the puerperium the mean average daily output of creatinin was found to be 1.09 gm., in two cases in which the uterus was undergoing involution, and .897 in two cases in which the uterus had been removed. Therefore, during this period it appears that approximately 2 gm. less of creatinin is excreted by a puerperal patient, if hysterectomy has been performed. Later in the puerperium the excretion of creatinin has always been lower than during the first two weeks.

An increase in the excretion of creatinin during the puerperium has frequently been demonstrated and has generally been attributed to the involution process, but Heynemann[3] thought additional causes for the phenomenon existed in the muscular effort incident to childbirth and in the restricted diet generally employed thereafter. It would seem, however, that these factors are not essential, for we have observed the phenomenon though the patient was delivered by operation, before the onset of labor, and though she received from the third postoperative day a diet the caloric value of which was quite adequate for the individual.

After bleeding animals, Patterson[4] found the creatinin excretion was increased. If this factor played a rôle in our cases we are unable to estimate it, but in spite of such an influence a lower excretion was invariably found in case the uterus was removed. We are convinced, therefore, that an increased output of creatinin during the period of convalescence following cesarean section without hysterectomy, and also during the normal puerperium, is largely, if not entirely, due to the involution of the uterus.

Soon after Folin[5] devised a satisfactory clinical method for the estimation of creatinin and creatin, the presence of the latter in the urine was sought in a great many different pathologic conditions. Not infrequently during the course of disease creatin was found, but in health it was learned that the urine contained no creatin, or amounts too small for measurement. In the case of women during the period of convalescence from childbirth, however—a borderland between sickness and health — creatin was demonstrated to be a regular constituent of the urine. This observation made in 1908 by Schaffer[6] has been amply verified; but the hypothesis he offered, which attributed the creatinuria to the involution of the uterus as we have said, has been called into question. In these circumstances it is instructive to compare the excretion of creatin in four cases of cesarean section, in two of which the uterus was removed and consequently the involution of this organ could play no part in the metabolism of creatin.

In all the four cases the urine contained a large amount of creatin during the early part of the puerperium. For the first thirteen days of this period the average daily excretion was .207 gm. and .167 gm., respectively, in the two cases in which the uterus was in situ; the corresponding figures for the cases of hysterectomy were .285 and .329 gm. Thus it appears that the removal of the uterus did not modify the creatinuria. As a matter of fact, in the cases in which the involution of the uterus was in progress, smaller amounts of creatin were present than in the cases in which the organ was removed irrespective of the surgical procedure.

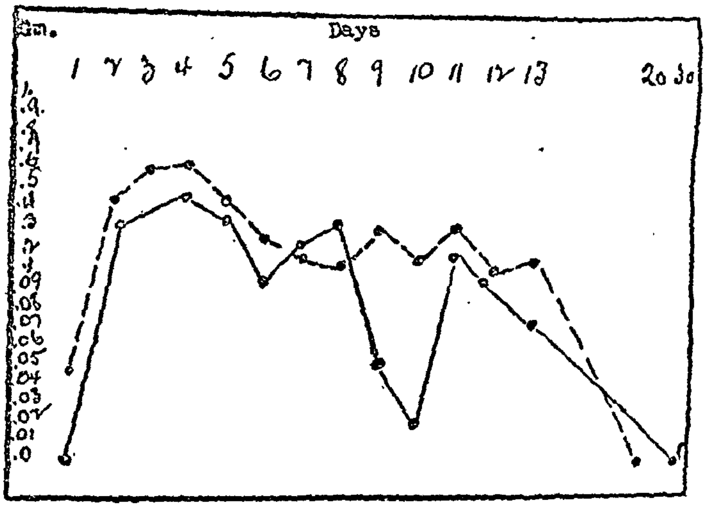

Chart 2.—Contrasting the creatin of the urine after conservative cesarean section and after the Porro operation. Solid line represents the excretion in the case in which the uterus was not removed; broken line that of the case in which it was removed.

The curve representing the daily excretion has generally been of the plateau type. On the day following the operative delivery there begins a notable rise in the output, the maximum is reached about the fourth day, and except for an occasional irregular drop the curve remains high for approximately two weeks. The urine was free of creatin in the cases of hysterectomy on the twelfth and twentieth days, respectively. In one of the cases in which the uterus was not removed, creatin was present on the fifteenth day, when observations were interrupted, but was not found subsequently from the thirtieth to the thirty-fifth days. In the other case of a conservative cesarean convalescent from a toxemia of pregnancy, creatin was still present on the twenty-third day postpartum (.057 gm.). For the first thirteen days of the puerperium the total excretion of creatin in the four cases was as follows: The uterus in situ and involuting, 2.17 and 2.48 gm.; the cases in which the uterus was removed, 3.71 and 4.27 gm. Such results clearly indicate that the creatinuria which always occurs during the period following childbirth is not dependent on the involution of the uterus.

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[2] Slemons: The Involution of the Uterus and Its Effect upon the Nitrogen Output of the Urine, Bull. Johns Hopkins Hosp., 1914, xxv, 195.

[3] Heynemann: Zur Frage des Leberinsuffizienz und des Kreatinstoffwechsels während der Schwangerschaft und bei den Schwangerschaftstoxikosen, Ztschr. f. Geburtsh. u. Gynäk., 1912, lxii, 110.

[4] Patterson: A Study of the Influence of External Hemorrhage on the Partition of Urinary Nitrogen, Biochem. Bull., 1913, ii, 555.

[5] Folin: Beitrag zur Chemie des Kreatinins und Kreatins im Harne, Ztschr. f. physiol. Chem., 1904, xli, 223; The Chemistry and Biochemistry of Kreatin and Kreatinin, Festschrift für O. Hammarsten III, Upsala, 1906.

[6] Schaffer: The Excretion of Creatinin and Creatin in Health and Disease, Am. Jour. Physiol., 1908, xxii, 1.

The facts learned regarding the excretion of creatinin and creatin in these patients have a significant bearing on the question in general of the metabolism of these substances. On the one hand, the quantity of creatinin eliminated depends on the involution of the uterus; on the other hand, there is no relation between this process and the elimination of creatin. And it is also true in these cases that the excretion of the one substance bears no direct or reciprocal relation to the excretion of the other. For these reasons it appears that at least during the puerperium the metabolism of the two substances is independent—a fact which accords with the recently announced views of Folin[7] and of Klercker.[8]

The explanation for the creatinuria of the puerperium is doubtful. Our observations not only make untenable the involution hypothesis of Schaffer and of Murlin,[9] but they also fail to support Mellanby's hypothesis attributing the phenomenon to a failure of excretion of the creatin through the milk. Our cases showed marked creatinuria even though the breasts were functioning normally.

To recapitulate: From observations made on four cases in which cesarean section was performed, in two instances without removal of the uterus, and in two instances with hysterectomy, the following conclusions may be drawn.

1. A lower total nitrogen output is observed in case hysterectomy is performed, and the higher output of nitrogen observed when the uterus is left in situ is explained by the involution process.
2. A lower creatinin output occurs in case of hysterectomy and at least 2 gm. of this substance excreted during the puerperium arise from the involution of the uterus.
3. Creatin in large amounts regularly appears in the urine following childbirth. The creatinuria is independent of the involution of the uterus, and it is also independent of the creatinin metabolism.

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7. Folin and Denis: An Interpretation of Creatin and Creatinin in Relation to Animal Metabolism, Jour. Biol. Chem., 1914, xvii, 493.

8. Klercker: Beitrag zur Kenntnis des Kreatins und Kreatinins im Stoffwechsel des Menschen, Biochem. Ztschr., 1907, iii, 45; Ueber Ausscheidung von Kreatin und Kreatinin in fieberhaften Erkrankungen, Ztschr. f. klin. Med., 1909, lxviii, 22.

9. Murlin: Protein Metabolism of Normal Pregnancy, Surg., Gynec. and Obst., 1913, xvi, 43. Murlin and Bailey: Further Observations on the Protein Metabolism of Normal Pregnancy, Arch. Int. Med., September, 1913, p. 288.

ELEMENTARY BUT VITAL FACTORS IN THE EFFICIENCY OF SMALLER HOSPITALS *

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To add to my personal knowledge of the hospital situation, I sent a rather exhaustive questionnaire to the leading medical men of one of our western states, hereinafter known as "Mid West." The response was most generous. No effort is made to classify the answers, but it is a fair assumption that they represent the general situation, especially in hospitals of from forty to 150 or 200 beds, and they are conclusive evidence that the medical profession is not satisfied with existing conditions, and is fully alive to the pressing need for improvement. Not only is the medical profession fully and painfully cognizant of the many shortcomings in hospital management and service, but the public, already skeptical in regard to the medical profession, is rapidly learning that many hospitals are not as efficient as they might be; and that a palatial operating room does not always mean careful diagnoses, good beds, well-trained nurses, and faithful bedside attention. The public is learning to discriminate between the good and the indifferent. It is only by putting the house in order that the latter all too common type of hospital can escape severe but well-merited criticism. The hospitals that are first to read and heed the signs of the times will spare themselves the rude but belated and unpleasant awakening to the fact that very desirable and financially able patients are seeking better managed and more efficient institutions.

I am, further, convinced that the present efficiency of many of these open hospitals can be doubled, increasing their annual budget, and with much more satisfactory results in every department.

The great majority of the hospitals in "Mid West" are "open." Every physician or surgeon bringing a patient is admitted without question. One of these hospitals has fifty beds and 100 members on the staff. My informant seriously assured me that this was a "closed" hospital, although he was unable to mention the name of a single practitioner of medicine within a reasonable distance who is not freely and probably gladly admitted. He compromised by insisting that the hospital is "not wide open."

THE ATTENDING STAFF

In not more than 5 per cent. of the hospitals in "Mid West" is there anything but a nominal staff; usually there is no staff. When a so-called staff really exists, it "does not meet at all," or it "meets once or twice a year," or "once in a decade," or it "meets when a fight is on," or "everything is hit or miss." Compare this warping, withering, dwarfing, disintegrating situation with the stimulating and invigorating practice in vogue in the oldest and one of the most progressive hospitals in America, located in a great metropolitan city. In this hospital the attending staff meets one afternoon each week, to study and discuss interesting cases; it has one business meeting each month, held just before the monthly meeting of the hospital management; and once each quarter the staff

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* Read before the Section on Hospitals at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

and the management have a conjoint business meeting with a dinner.

The attending staff usually sets the pace for the hospital. With an active, progressive, united and cooperating staff, the hospital must be good, because such a staff will make it good. With a staff the reverse of the foregoing, the hospital cannot be good, unless the hospital has an unusually well-organized and efficient nursing staff, with a few unusually strong men on the attending staff.

If there be one special characteristic of the usual attending staff, it is a woful lack of harmonious cooperation, and a great surplus of petty jealousy and bickering. It may be conceded, I think, that the management of a private hospital has the right to select the members of its staff, has the right to say who may enter, and who must remain away. If the hospital management would stop at this point, much would be gained. But the management of some hospitals assumes the right to appoint staff committees or to insist that certain men constitute all or a part of the executive committee of the staff. Unfortunately, in many instances, the management of the hospital is not a good judge of professional efficiency; the wily self-seeking politician, "cowering low with blandishment," receives a much more attentive and willing ear than patient merit that frankly speaks the truth. As a result, incompetent men are too often appointed on such committees. The employees of a great industrial concern have the right to organize as they see proper. How a hospital management can presume to inflict a committee on men whom it invites into the house, to divide with it a great responsibility, or how men can accept such a situation, is beyond comprehension. A staff dominated by an incompetent committee, appointed by the management, is a hopelessly disorganized staff, and not only will the hospital suffer, but also the staff members individually. A staff must be left free to organize as it sees fit, and to select its own officers and representatives. I have seen several attending staffs sadly disorganized because the management insisted on selecting or appointing an unfit committee, although in each instance there was in the staff a group of splendid progressive men, several of whom had seen high-grade intern service, who were in every way deserving of the confidence of their fellow members and of consideration by the management. It is a mistake for the hospital management to appoint even the best men on a committee, as such men will be far more efficient if selected by their fellows.

The right to seek advice and council when and where it will cannot be denied the hospital management. It may invite one man or a group of men to act as its privy council, and in this choice consult only its own pleasure. This is quite a different thing from appointing a staff committee, to dominate the staff, to represent the staff, or to misrepresent the staff, as the committee sees fit. A staff so dominated or controlled can never raise itself to the high level outlined in this paper. The date of its birth and demise are the same, so far as serving a useful purpose is concerned.

What is the chief function of a hospital staff? The answer is very simple. The chief function of a hospital is to educate itself, individually and collectively, to better discharge the duties and obligations incurred by its members in accepting a staff appointment. To serve its purpose, a staff must hold frequent meetings, at which not only hospital problems, but more especially medical problems must be discussed, interesting cases must be presented for consideration, pathologic specimens must be studied, that all may be benefited. As failures are often even more instructive than successes, the former also should be reported for free discussion. It is especially important that the causes of "accidents" be thoroughly investigated and the responsibility fixed. Staff members should make frequent visits to medical centers, and every member making such a visit should bring back with him, for the benefit of his fellows, whatever seems to him worthy of presentation. The operating room should be open to staff members at all times, and all operations should be bulletined. As many members as possible should be invited to study interesting cases in the wards. Necropsies should be bulletined. In this way the experience of each staff member will become very considerable. It might be well for the staff to organize itself into a current medical literature club, to better keep abreast of the times, and also to have its members present synthetic reviews on this or that topic, thus taking an invoice of knowledge in stock. All staff members ought to take an active part in medical society work. With the improvement of the staff individually and collectively as the prime motive in staff organization, increased staff and hospital efficiency, and better service to the patient will be sure to come. *All* of this is very elementary and self-evident, yet I failed to find one open hospital in "Mid West" in which the staff either realized its opportunities or profited by them, along the lines suggested. Failure to recognize this important function, more than anything else, is responsible for the very general spirit of unrest and dissatisfaction at present existing in the hospital world. Its recognition and exercise must be the first step in the solution of many hospital problems.

With the right kind of attending staff, requests addressed to the hospital management will always be reasonable, in the interests of all concerned, and will receive respectful consideration. To keep the men pushing all at the same time, and in the same direction, will surely bring better things.

THE TRAINING SCHOOL AND THE NURSING STAFF

It need not be said that the members of the attending staff are under serious obligations to the training school, and that it is their duty to cooperate with the head of this department to give the young women in training a proper course of instruction, both theoretical and practical. Such a course must include the necessary laboratory work in selected medicochemical subjects, and in practical becteriology. A nurse cannot grasp the important facts in infection, or understand the all-important rôle of bacteria in surgical work, unless she knows something of bacteriology, and her knowledge must be practical as well as theoretical. Too often the obligation as instructors of nurses rests very lightly on staff members, who do not appreciate the responsibility they assume when they accept the invitation to teach.

The object of the training school is, or should be, primarily, to fit young women for the very responsible duty of properly caring for sick people. Judging from the practice in vogue in some hospitals, the management considers the training school an effective means to reduce the hospital expenses, or even a source of revenue. The management is ever ready to assign a pupil nurse to a special case, charging the patient for this service from $15 to $20 per week. I have known girls still on "probation," and not infrequently nurses in the third or fourth month of training, to be assigned to special cases. To pay a nurse $6 or $8 per month, and have her earn $20 per week, seems a not unprofitable arrangement, but in reality is short-sighted and ruinous. Such service cannot be profitable. The patient pays for and has a right to expect skilled service. It is unfair to the pupil nurses, because special duty often lays on their shoulders responsibilities for which their youth, lack of training, and inexperience entirely unfit them. It is unfair to the doctor because he has a right to assume that his patient, while in the hospital, is under trained and skilful eyes, not always the case in some hospitals. In fact, the question is often forced, "Would the patient not be much safer in his own home, in charge of a selected graduate nurse?" Some training schools expect members of the attending staff constantly to excuse and cover the shortcomings of untrained inexperienced girls; one is expected to become a party to a system which is as dangerous to the patient as it is unfair to the nurse, and which in the end is sure to be disastrous to the reputation of the hospital.

Young nurses ought to be under the direct, Argus-eyed supervision of older nurses, and ought to be in training at least eighteen months before they are assigned to special duty, even in mild cases. They ought to have completed two years of their course in training before they are assigned to special duty in serious cases. The head of the nursing staff ought not to assign pupil nurses to special duty at all, if by so doing the nursing staff is depleted, and the nurses remaining "on general" are overworked and unable to care properly for their patients. This practice is exceedingly bad even from a business standpoint. One patient with a "special" may leave the hospital fairly well satisfied, but a much larger number of patients "on general" leave the hospital feeling that they have not received the attention to which they were entitled. If the head of the nursing staff cannot provide special pupil nurses without overworking the nurses "on general," it is a far better policy to invite graduate nurses into the house for special duty. For obvious reasons a few mercenary hospitals insist that all special nursing in the house shall be done by pupil nurses. Some hospitals even assign a pupil nurse as a companion to a patient able to pay $20 per week. To be an agreeable companion to a "difficult" patient may be an accomplishment of some value, but of such experience a nurse has quite enough, without wasting time that should be devoted to acquiring real useful information. Besides, the nurse is not assigned to this post for her benefit, or for the benefit of the patient, but for $20 per week. Some hospitals assign entirely too many patients to one nurse, as many as six or seven or more patients in private rooms in charge of one nurse being not uncommon. But even with this great pressure on the nurses "on general," there is always one more pupil nurse for special duty, a most short-sighted policy.

Absolutely essential to good work by the nursing staff is management and discipline. I have said that the one special characteristic of the usual attending staff is a woful lack of harmonious cooperation. In a like manner the chief characteristic of many nursing staffs is a woful lack of efficient organization. The nursing staff must have a single, efficient, responsible and fearless head. This head must admit trainers, reject them if unfit; she must have the power to dismiss any nurse in the hospital. Head nurses on the floors of the wards must be just as completely under her authority as the youngest "trainer." In some hospitals, it occasionally happens that head nurses on the floors or in the wards, in length of service or in age, rank the head of the nursing staff, and hence do not take kindly to suggestions or advice. Sometimes these head nurses are not responsible to the head of the nursing staff, but to the same authority to which the head of the nursing staff owes her appointment. I must speak plainly on this all-important point. In community hospitals it very often happens that the head nurses on the floors or in the wards are members of the community and have occupied their positions for years. A younger member of the community, or an efficient lay nurse, is made head of the training school, or head of the nursing staff. This arrangement is entirely inconsistent with high-grade work, as the head of the nursing staff never has that authoritative control so necessary to efficient service. Far better to retire the noble well-intentioned women that have long since earned their crown, and put in their places well-trained, tactful and capable young women, graduate nurses if possible; but far better than the veterans would be the picked members of the third year class of "trainers." To be appointed head nurse on the floor or in a ward would be a much sought-after distinction, and such head nurses would respect and carry out the wishes and ideals of the head of the nursing staff.

If a community has one member competent to act as head of the nursing staff, that member must be put in control, in complete control, of all the departments of the nursing service; she must have the authority to dismiss any nurse regardless of age, position, length of service, or date of affiliation. If a community hospital is unfortunate in not having one such competent member, one must be developed or secured in some way. A thoroughly competent head of the nursing staff will get along in some way, and with great credit to herself and to the hospital, if given a free hand, even without very active cooperation on the part of the attending staff. An inefficient head of the nursing staff makes high-grade service impossible.

With a good attending staff, and with a competent, unfettered head of the nursing staff, there remains but little to add; all else will follow, and the work of the hospital will be high grade.

I wish briefly to refer to the practice in vogue in many of the medium-sized open hospitals: that of having every nurse graduating from the training school serve a short period at the instrument table. Smooth operating room work is not possible with such service. Worse still is the practice which one sometimes sees of having an older nurse, during the operation, act as instructor to the younger nurse at the instrument table. Nothing so loudly and so unfavorably advertises the shortcomings of the operating room service as this thoroughly amateur practice. I should very much prefer the untried nurse, green as she is, than the combination of teacher and pupil at the instrument table, a new nurse being introduced just as soon as the one becomes somewhat proficient. The impossibility of making every graduate an operating room nurse has long been recognized, and the best interests of the patient and of the hospital demand that the attempt to do so be discontinued. Work at the instrument table, as head nurse on the floor, or in a ward, must not be a part of the nurses' curriculum, but a distinction reserved for those especially capable.

AN EFFICIENCY EXPERT

There is no place where an efficiency expert can be more valuable than in the average open hospital. An expert of this kind ought to be employed for short periods, and as often as may be necessary. A report ought freely to criticize the hospital management in all its details, from the dean of the attending staff and the head of the nursing staff, to the orderly in the wards. Every one at all familiar with the ordinary hospital knows how much time is wasted by members of the attending staff and by nurses, and this needless waste of time is not confined to any particular department. It is found all through the house, from the minute the patient enters, until the nurse, with a "bon voyage," passes her into a departing taxi: the great distance nurses travel — travel is the word — to get a drink of water for a patient, or to journey to the chart room to fill in the records, the time that is lost in serving meals, the hours that are lost by the members of the attending staff in waiting for dressings, or because the operating room is not in readiness. An efficiency expert would see many time-saving opportunities that entirely escape notice, not only by those who have been long in the service, but also by the more or less critical causal visitor. In fact, those long in a service are the very last to see the weak points of such a service; they have become a part of the system, and the system a part of them, and too often they are both deaf and blind to its imperfection. The efficiency expert would note also the character of the bedside attention, whether prompt, gentle, tactful, and skilful, or whether dilatory, rough, irritating and crude.

CONCLUSION

A high-grade hospital must have a conscientious, progressive, united and cooperating attending staff, integrated to educate and improve itself, and to discharge its duty alike to patients and to nurses in training.

It must have a nursing staff under the guidance and control of a single, efficient, capable and authoritative head.

It must have a general management which, hard pressed though it may be by financial considerations, remains ever sensitive and responsive to the best interests of its patients.

In such a hospital, responsibility can always be fixed, untrained and poorly supervised girls are not assigned to special cases, the number of patients under the care of one nurse "on general" never exceeds a certain fixed minimum, there is not an unending chain of inexperienced girls at the instrument table, and an efficiency expert is rarely needed. This hospital will fulfil its high mission as an educator of the profession and the community in which it is located.

ABSTRACT OF DISCUSSION

Dr. I. D. Webster, San Diego, Calif.: I am new at the hospital business. It has fallen in my lot to have charge of the San Diego County Hospital. We had a county physician in that county who did not agree with the county medical society or any of its fellows, and the hospital was closed to the medical profession of the community. The county medical society took the matter up and through the board of supervisors I was appointed county physician. I immediately called on the county medical society to furnish the visiting staff. As far as I know the very close relationship that we have established between the county hospital and the county medical society is perhaps somewhat unique. I asked the county medical society to appoint a so-called hospital committee, of which they made me a permanent member, with two other members from the county medical society, and it rests with this hospital committee to choose the visiting staff at the hospital. We had about forty volunteers seeking to get on the staff, and the present situation is that there are a great many who would like to be on the staff to whom we cannot give places. We have four general surgeons, two gynecologists, one orthopedic surgeon; one man who does nothing but pathology and has charge of the laboratory, one on nose and throat and one man who does nothing but the eye. There is a three months' service for each individual through the year and I believe there is some dissatisfaction at that. We are trying to figure out some way to make their services continuous through the year. In regard to the training school, it was a two years' school and the graduates were not eligible for registration. We changed it to a three year course and we were told by the registrar of nurses that our school made the greatest progress of any school in the state. It is about two years since we made this change.

Dr. William H. Walsh, Philadelphia: I am forcibly opposed to nurses giving anesthetics, for I consider the administration of an anesthetic a very important function of the practice of medicine, and under this assumption, from both a professional and a legal standpoint, it would seem perfectly logical to assume that a nurse has no more right to give an anesthetic than she has to open the abdomen. While it is becoming quite common to find that almost any nurse considers herself a competent anesthetist, it is a well-known fact that very few nurses ever become competent in that highly specialized work, and then only after the most painstaking instruction and long and varied experience—experience that is necessarily acquired at the expense of the patients. The examination of a patient before the administration of an anesthetic is a vital part of the duties of the one who gives the anesthetic, and it is quite beyond my comprehension to understand how a nurse can perform this part of her duties with the limited amount of medical knowledge at her command. Finally, the administration of an anesthetic is the function of a physician, and I believe that if the question were ever brought before the higher courts it would be definitely decided that the administration of these drugs was in fact practicing medicine.

With regard to the point emphasized by Dr. Littig concerning the selection of the officers and the committees of the hospital staff, it is a question in my mind whether it is not sometimes better for the board of managers to pick out certain live, wide-awake, progressive members of the staff and make them the officers thereof rather than permit the staff to go on year after year electing the same old reactionary members as their officers, without the courage even to propose others for fear of offending the overlords. This evil tendency forms what has been called by Dr. J. Chalmers DaCosta the "system." It means that certain of the older members of the staff improperly and unjustly acquire sufficient influence and power to further their own selfish interests at the expense of the hospital and public welfare. Under such domination, even a good hospital superintendent is often thwarted in his attempts to do what he knows is for the best interests of the hospital, and in spite of the protests of the regularly appointed authority, these men get more than they deserve. Their opinions on vital questions are often accepted, and they become highly indignant at the attempt of the hospital administrator to suppress the abuses that they foster. With such a staff in full sway the abuses accumulate with great rapidity and neglect is tolerated and excused in those who belong to the "system," but for others the best efforts and most brilliant accomplishments are censured. New appointments to the staff are handled much as is the common garden variety of ward politics, the question of fitness being of little importance, personal reasons being the deciding factor. Again, in the words of Dr. DaCosta, "On one side we see the suffering poor; on the other the foul, loathsome rule of the 'system.' Everything is passed on to the men higher up. If I had my way I'd strike that thrice accursed 'system' dead." I should be pleased to assist Dr. DaCosta when he gets ready to strike. On general principles it would be the best plan to formulate a rule in every hospital that staff officers shall not hold office longer than a period of two or three years, and by this procedure it might be possible to break up the "system."

With regard to the question of continuous service, which has been so ably handled by Dr. Littig, I think it is generally conceded by all close observers of hospital work that both from the standpoint of the medical treatment of the patient and the administration of the hospital, it is a far better plan to have continuous service in preference to any other arrangement. The first consideration in any hospital should be the proper and efficient care of the patients treated therein, and there can be no sound argument against the proposition that the patient is better treated if one physician or surgeon attends him throughout his stay in the hospital. This fact is particularly applicable to the orthopedic service of a hospital, it being particularly desirable that the man who operates in such a case should not only supervise the after-treatment, but should prescribe the proper brace, approve of its adjustment and indicate the changes necessary as the child grows. When the individual patient treated in the hospital becomes the most important consideration in that institution, continuous service will be adopted in all cases.

DR. L. W. LITTIG, Davenport, Iowa: I wish to say that is what we hope to accomplish, to have some of these somnolent gentlemen retire. A staff that does not meet for six years is moribund; it is better to have its inactive leaders retire and more progressive men elected to their position. The question of anesthesia does not trouble us much in the Middle West. We have good anesthetists, usually young practitioners that make a specialty of anesthesia, and really do very well. We have but few resident physicians, probably in not more than six hospitals, and in two of these hospitals the anesthetic is administered by students, under the direct supervision of an expert anesthetist. We never have nurses give anesthetics, although the fact has been demonstrated that nurses do make splendid anesthetists. I do not think it is essential that every nurse graduating from a hospital should serve a course at the instrument table. After graduating, nurses have very little work of this kind to do unless they take up hospital work, when an additional course in training should be taken. It is certainly dangerous practice to have every nurse that graduates serve a short term at the instrument table. This is not done in any of the large clinics. The average nurse can pick up all she needs to know by careful observation as assistant to the first operating room nurse.

Tuberculous Metatasis.—It is a sound assumption, that general metastasis in its worst form of tuberculous meningitis is an accurate index of the tendency of any procedure, whether surgical or therapeutic, to mobilize tubercle bacilli infesting tuberculous lesions in various parts of the body. Again and again it happens that in mobilization of tuberculous joints, after necessarily imperfect surgical operations on tuberculous joints or bones or mucous membranes (rectum), or in lymphatic glands, metastasis has been followed by fatal tuberculous meningitis. In these operations, which frequently involve scraping and other crude methods which inevitably open up afferent venous and lymphatic channels by which material elements, such as tubercle bacilli, may be carried into near and distant parts by these channels, tubercle bacilli find their way into the general circulation, and, if in sufficient numbers, may lead to tuberculous meningitis. In some cases, the tuberculous meningitis may be independent of this local injury of tuberculous tissue, but in many cases the tuberculous meningitis is the direct effect of the damage to the tissues around the tuberculous focus.—W. Camac Wilkinson, M.D., *Practitioner*, October, 1915.

THE BLIND DENTAL ABSCESS*

HENRY LUDWIG ULRICH, M.D.
MINNEAPOLIS

At the University of Minnesota Hospital, in an effort to correlate oral sepsis with systemic lesions, particularly in patients exhibiting rheumatoid conditions, special inspection of mouths was made for pyorrhea, gingivitis, caries, and by means of the Roentgen ray, for apical abscesses. We were struck by the frequency of apical abscesses in these cases. Routine work was extended to all patients in the hospital in the medical service. Further search was made for apical abscesses by studying the roentgenograms of the mouth in a medical Roentgen-ray laboratory, the purposes of the roentgenograms in many instances being remote from that of ours. The findings are as startling as they are of significance. A little over 68 per cent. of all artificially devitalized teeth were found with apical abscesses, and the total number of abscesses, on 1,350 dead teeth, including those found on pulpless teeth due to caries or accident or to proximal fillings was 83 per cent. (Tables 1 and 2).

TABLE 1.—DENTAL ABSCESSES FOUND IN FIVE HUNDRED CASES

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
500	1,350	976
Number of these teeth abscessed	Nmber of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
669, 67.5%	439, 32.62%	1,108, 83.42%

TABLE 2.—DENTAL ABSCESSES FOUND IN EIGHTY CHARITY AND THIRTY-SEVEN PRIVATE PATIENTS*

CHARITY PATIENTS

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
80	241	111
Number of these teeth abscessed	Number of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
82, 73.87%	130, 53.5%	212, 88%

PRIVATE PATIENTS

Number of cases	Number of dead teeth	Number of dead teeth with root canal fillings
37	131	102
Number of these teeth abscessed	Number of abscesses on pulpless teeth due to caries or accident	Total number of abscesses
76, 74.7%	29, 22%	105, 80%

* In 117 cases divided into poor and rich patients little difference is shown in apical infections.

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* From the Department of Medicine of the University of Minnesota.

* Read before the American Association of Immunologists, Washington, D. C., May 10, 1915.

One hundred and fifty-nine of these cases with apical abscesses have had bacteriologic review. Henrici[1] reports 107 cases from the University clinic of which 100 gave the *Streptococcus viridans*. Fifty-two are from my private clinic, fifty of which gave *S. viridans* or *S. hemolyticus;* occasionally *S. mucosa* was recovered. Thus, 150 of these 500 cases gave evidence of streptococcus, either in pure culture, or as the dominant organism. Occasionally the *Staphylococcus aureus, or albus,* or the *Micrococcus catarrhalis* was also observed in conjunction with streptococcus. The bacillary growths were considered contaminations. Gilmer and Moody[2] report streptococci, both *S. viridans* and *S. hemolyticus,* and other organisms, such as *S. aureus, Micrococcus catarrhalis,* the *Bacillus fusiformis,* and in two instances diphtheroid bacilli.

Hartzel and Henrici[3] find in 162 cases that 150 yield streptococci. They report inoculation of twenty-four rabbits with *Streptococcus viridans* isolated from apical abscesses. Heart lesions were found in five, kidney lesion in seven, those of the aorta in three, and of the joints in two.

In the light of the doctrine of focal infections the prevalence of these abscesses, with their flora and its pathogenicity, takes on added significance. To me the apical abscess is merely another evidence of a focus of streptococcal focal disease, just as the lesions found in the heart, the mucosa of the stomach, the articulations or the kidneys are evidences of secondary deposits. In other words, it is hematogenous in origin.

Rosenow[4] remarks:

> It would seem, therefore, that focal infections are no longer to be looked upon merely as a place of entrance of bacteria, but as a place where conditions are favorable for them to acquire the properties which give them a wide range of affinities for various structures.

At the time of devitalization of a tooth apical trauma occurs with its subsequent area of lowered resistance, and possibly lowered or changed oxygen pressure, thereby forming an ideal nidus for streptococcal growth. This is possibly the explanation of all apical abscesses with the probable exception of those capping pulpless roots following caries. Under preexisting conditions of caries I can readily see that infection may travel along the canal, producing direct infection of the alveolar bone. It is an interesting commentary that those who have written on this subject, Billings, Rosenow, Gilmer and Moody, and Hartzel and Henrici have still the old habit of thought in looking on the mouth as a primary territory apart from the rest of the body. The suggestion first made by me[5] that these foci are not primarily dental, but secondary deposits, that is, hematogenous in origin, has produced stormy discussions among dentists. One group has accepted the suggestion, while the other claims that these abscesses are due to dental technic, that is, a matter of poor root-canal filling. It seems highly improbable to me that out of 159 possible infections, 150 should turn out streptococcal in origin if there were not some broad biologic law, such as the selective and mutative activity of this group, to account for such results.

Experimental evidence as to the mode of origin of these abscesses has not been secured. Their pathogenicity and their relation to other concurrent foci have had ample clinical verification. There are four striking forms of evidence for this judgment:

First, acute exacerbation of systemic symptoms takes place following their removal; in other words, focal reactions occur, owing to auto-inoculation at the time of their reduction.

Second, acute new systemic symptoms have followed reduction of these areas; in other words, other foci were established.

Third, improvement and sometimes total recession of other focal areas followed the extirpation of these sites.

Fourth, local and focal reactions occurred with vaccines prepared from infected apical areas.

Seventy-six cases were analyzed clinically in which a streptococcus was isolated from apical pockets.

In a recent study, "Streptococcicosis,"[6] they were classified for convenience into:

First, a rheumatoid group in which the special feature of the cases consisted of arthritis deformans, rheumatoid arthritis, neuritis and myositis, with or without cardiac involvement (38 cases).

Second, a cardiovascular group exhibiting in the main feature heart lesions or hypertension without any appreciable rheumatoid manifestations (6 cases).

Third, an asthenic group closely allied to Group 1, showing joint, periarticular pains, nerve or muscle pains, but in which the main feature is one of asthenia, mild anemia, albuminuria, and occasionally myocardial weakness. Visceroptosis is a common finding in this group (18 cases).

Fourth, a gastro-intestinal group exhibiting gastroduodenal ulcers, gallbladder or pancreatic symptoms, and acute enteritis (4 cases).

Fifth, a genito-urinary group allied to Group 1 in having at times rheumatoid pains with renal, bladder, prostatic or vesicular involvements (2 cases).

Subgroup 1, streptococcus focal infections superimposed on tuberculosis, syphilis, primary anemia or vice versa (8 cases).

A striking feature of this analysis is the diversity of clinical manifestations for which streptococcal focal disease is responsible. The diversity of symptoms is so marked that I have proposed the term "streptococcicosis" for streptococcal focal disease. Under such an etiologic name various branches of the profession could approach this diverse problem with much more clarity and unity.

Of the more striking foci or symptoms in these groups we have manifestations of rheumatoid conditions, 51 per cent.; heart lesions, 47 per cent.; blood (that is, secondary anemia), 43 per cent.; tonsils, 40 per cent.; pyorrhea, 25 per cent.; kidneys (albuminuria and nephritis), 34 per cent.; caries, 15.8 per cent. (Table 3).

Although the tonsil is represented by 40 per cent., a certain number of these patients presented themselves with tonsils removed; or in the early efforts at correlation, the inspection of the tonsil was not so close as it is at present. The tonsil or pharyngeal ring is the commonest focus and possibly the primary portal of entry. Experience with alveolar infection in which systemic symptoms were present has made us very cautious concerning the apparently innocent looking tonsil. Invariably the same tonsil on closer inspection, and particularly after it had been removed, under protest, by the throat specialist, has proved our suspicions correct.

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[1] Private communication.

[2] Gilmer, T. L., and Moody, A. M.: A Study of the Bacteriology of Alveolar Abscess and Infected Root Canals, The Journal A. M. A., Dec. 5, 1914, p. 2023.

[3] Hartzel, T. B., and Henrici, A. T.: A Study of Streptococci from Pyorrhea Alveolaris and from Apical Abscesses, The Journal A. M. A., March 27, 1915, p. 1055.

[4] Rosenow: Transmutation within the Streptococcus-Pneumococcus Group, Jour. Infect. Dis., January, 1914.

[5] Ulrich: Some Medical Aspects of Certain Mouth Infections, Dental Rev., December, 1914.

[6] Read before the Minnesota Academy of Medicine, Jan. 6, 1915.

To us who are attempting active immunization against disease, the blind dental abscess has a very practical significance; the apical abscess may be the only focus left, evacuation of which will permit the reestablishment of renewed integrity to all parts. It may hold the balance of power in the struggle of the body for complete sterilization. Thus the discovery of such a focus is important in the prognosis of any given case.

TABLE 3.—NUMBER OF TIMES CLINICAL MANIFESTATIONS OR SYMPTOMS WERE NOTED IN SEVENTY-SIX CASES OF STREPTOCOCCICOSIS WITH ALVEOLAR ABSCESSES

Rheumatoid conditions	39	Gastric ulcer	4
Cardiac lesions	36	Cystitis	3
Secondary anemia	33	Pharyngitis	3
Chronic amygdalitis	30	Ascites	2
Pyorrhea	20	Glucosuria	2
Albuminuria	19	Prostatitis	2
Caries	12	Conjunctivitis	2
Visceroptosis	10	Primary anemia	1
Adenopathy	8	Enteritis	1
Neuritis	7	Syphilis	1
Bronchitis	6	Iritis	1
Hypertension	6	Emphysema	1
Nephritis	6	Exophthalmic goiter	1
Tuberculosis	6	Rhinitis	1
Leukocytosis	4		

In every case of streptococcal focal infection, its presence or absence must be established. I can look back on my attempts at vaccine therapy in middle ear, accessory sinuses, and chronic bronchial cases, and now see a possible explanation for some of the puzzling reactions and failures I achieved.

In every case of focal infection due to streptococcus, the presence of this focus may aid us in obtaining material for the preparation of vaccines. Much trouble and disappointment in attempting cultures from glands and tonsils can thus be avoided.

It is difficult, if not too early, to judge of the value of vaccine therapy in streptococcal focal disease. It is our custom to make a vaccine from a root pocket in every possible case, although the major number of these patients are relieved by the reduction of foci alone.

Ten cases with subacute or chronic rheumatoid conditions were treated with autogenic vaccines made from blind abscesses, all streptococcic in type.

Two cases with acute exacerbations of violent character were quickly relieved. In five cases of chronic arthritis, the patients were much improved. In two cases of arthritis, one of sixteen years' duration, the patients are still under treatment and are undergoing steady improvement. One patient with marked arthritis deformans has stopped treatment with no manifest improvement of the joints. Experience has taught us that small doses of vaccine, 5 or 10 millions at about five-day intervals, give the best results.

420 Syndicate Building.

HEMOLYSIS AND AGGLUTINATION IN TRANSPLANTATION *

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In studies of the conditions incident to the cause of autolysis and the dissolution of the transplant, we devoted especial attention to the influence of hemolysis and agglutination on transplants. No question is more timely than that concerning the causes of their absorption.

Most authors lay great stress on the importance of eliminating the two great dangers in blood transfusion — hemolysis and agglutination. We must consider blood transfusion not only as an infusion of a certain quantity of fluid, but also as a transplantation of a definite mass of tissue represented by the cellular elements of the blood.

Accordingly, before transplanting the thyroid, we first made hemolysis and agglutination tests, and operated only when these reactions were absent.

Owing to difficulties in obtaining and in handling the blood (which have since been obviated to some extent by a new method), we are thus far able to report results in only seven instances.

HEMOLYSIS AND AGGLUTINATION

Date	Donor	Host	Hemolysis	Agglut.	Remarks
1/22	179	180	Negative	Negative	In this instance there was autolysis and absorption in three months.
2/3	190	191	Partial	Negative	Thrombosis of the artery set in in six weeks.
2/17	201	202	Negative	Negative	The results were good after eight days.
3/10	224	225	Negative	Negative	The results were good after three weeks.
3/12	228	229	Negative	Negative	Hemorrhage set in in two weeks.
3/20	215	239	Negative	Negative	
4/9	281	282	Negative	Negative	

Before the employment of these tests, we were unable to obtain any results from homotransplantation. But since the importance of these reactions came to be more clearly appreciated, we have in two instances, at least, obtained a satisfactory preservation of the transplant for one and three weeks, respectively. While our experiments have been few in number, we feel justified in concluding from results so far obtained that the hemolysis and agglutination tests to a certain extent are some indication of the tolerance of the tissues of one animal for those of another. Such a hypothesis is given some support by the fact that in blood transfusion these reactions are now largely depended on as clinical indicators. May they not therefore be reasonably expected to be of equal significance in the transfer of the less liquid tissues from one organism to another?

969 Madison Avenue.

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FACTITIOUS DERMATOSES *

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The object of this paper is to record a group of cases of self-inflicted dermatitis, which have occurred during the last several years in the practices of the late Dr. James Nevins Hyde, the late Dr. Frank Hugh Montgomery, and myself.

Much confusion exists concerning the dermatitis herein described, and the physician who is originally consulted in these cases rarely is able to recognize their character, commonly on account of prejudice, through personal acquaintance with the patient or family. It is on account of this failure to appreciate the possibilities in these cases that it has been thought worth while to record this group of thirty-four cases.[1]

Opinions differ among men who recognize these, and some able observers have recorded cases as being of spontaneous origin, in hysterical persons, which later have proved to be factitious. That there are some cases in which a spontaneous origin can hardly be doubted, there is no question. Yet the large majority, according to most observers, have an associated, though often unrecognized, factitious origin.

In public practice, paupers and others are not infrequently seen who inflict injuries for the purpose of securing financial or other aid. In Europe, the professional malingerer is not uncommon, and the degree of skill exhibited by these people in imitating disease is at certain times high. In this country this class of cases is uncommon.

There is another class in which existing skin diseases are aggravated by irritation, and prolonged by the patient for various reasons. All of these types are excluded from this paper.

The major portion of the patients recorded here were women and poor girls of a highly neurotic temperament, and showing distinct stigmata of hysteria. As will be noted from the case histories, the lesions occurred on accessible parts of the body, such as the breasts, abdomen, and limbs; all were areas accessible to the right hand. The right arm was commonly exempt, except in left-handed individuals. The lesions occurred suddenly in all cases, and usually developed during the night, when the patient was alone; and several of the patients were able to predict the exact spot where a lesion was going to develop, much to the astonishment of their friends.

An interesting feature, in a large number of cases, was the fact that the disease was initiated through accident. This may have been trifling, and the dressing employed in the treatment gave the suggestion to the patient as to how to carry out the deception.

The symptoms in the cases vary from a simple erythema to vesicular, bullous, gangrenous and ulcerating lesions, with their sequels.

A number of cases are on record, and there occurs one in this series, in which tissue destruction has been marked, and amputation of fingers, the whole hand, and even the arm has been performed, with the full consent of the patient.

The methods employed by these patients are varied, and are at times exceedingly difficult to detect. A long list of animal, vegetable and mineral substances is included in this category. Those most commonly used are phenol (carbolic acid), croton oil, cantharides, mustard, various acids and alkalies, including lye, tartar-emetic ointment, cresol and compound solution of cresol. Other methods employed have been burning with matches, with pieces of hot metal, or with bottles containing very hot water, and friction with the fingers, sandpaper, and other rough substances. In one patient whom I saw, intense dermatitis was aroused by rubbing tobacco briskly into the skin of the genital region. The character of the lesions and the intensity of the inflammation depend not only on the agent employed, but also on the strength of the solution, the duration of the application, and the tissue resistance.

ETIOLOGY

The cause of these peculiar actions in the individual must be sought in derangement of the nervous system. All the intricate processes concerned in hysteria could be brought forth to explain the condition here. In some cases there is exhibited a desire on the part of the patient to escape from disagreeable duties or surroundings; in others, to gain attention, sympathy, interest or pity, or to achieve notoriety. In some instances, no possible explanation can be given, and it may be, as suggested by Pernet and Towle, that in a certain proportion of cases there is a dual personality, or a subconscious state, in which the lesions are produced, while in the normal condition the patient has no recollection of the acts performed in the other state.

Towle[2] explains the production of these lesions from the standpoint of hysteria, on the ground that the initial wound which occurs in numbers of cases serves as a suggestion to the patient, who afterward enters into a somnambulistic state, in which he is powerless to control the suggestion of producing wounds by any means at hand. On emergence from this state, the patient has no memory of the somnambulistic period or of the production of the wounds, and honestly believes the wound appeared of itself.

Pernet[3] concludes that in some instances there is an altered personality, whereby the self-infliction of wounds is not remembered by the patient at the time they are examined. In all these cases hysterical stigmata can be found.

Galloway[4] states that the more these cases are investigated, the less probable does their spontaneous origin become.

Jelliffe,[5] in a discussion of hysteria, states that the various cutaneous manifestations occurring in hysteria, such as bullous dermatitis and other lesions, are, in the vast majority of cases, artefacts; yet there remain a few in which this factor cannot be proved.

In the major portion of recorded cases the factitious element is present, though it has not been proved in many of them, for various reasons. Many cases of

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* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space, only a part of the case reports appears in The Journal. They will be recorded in full in the Transactions of the Section and in the author's reprints.

[1] A number of these were collected and the histories written by the late Dr. Montgomery for a paper which he read before a medical society. These are included in this report for the reason that no publication of the report was made.

[2] Towle: Gangraena Cutitis Hysterica: A Report of Four Cases Occurring in Hysterical Individuals, with a Review of Ninety Cases in the Literature, Part of Which Were Artificial, the Remainder Being Reported as of Spontaneous Origin, Jour. Cutan. Dis., 1907, xxv, 477.

[3] Pernet: The Psychological Aspect of Dermatitis Factitia, Jour. Cutan. Dis., 1909, xxvii, 547.

[4] Galloway: Allbutt's System of Medicine, 1911, xi, 54 and 55.

[5] Jelliffe, in Osler and McCrae: Modern Medicine, 1910, vii, 846.

pemphigus gangrenosus of supposedly spontaneous origin have been proved to be factitious by the discovery of the materials used, and later by confession of the patient. That spontaneous cases do occur is strongly supported by Van Harlingen.[6]

Corlett[7] reported a case having lesions of this type. The patient was a hysterical girl, aged 15. This case was recorded as one of spontaneous gangrene.

White[8] recorded a case of recurrent, progressive, bullous dermatitis in a hysterical subject. This case was well studied, and in the opinion of the reporter was one of spontaneous occurrence. In the discussion which followed the reading of the paper, opinion was divided as to its spontaneous or factitious origin.

Illustrating the difficulties encountered in arriving at conclusions on this point, may be mentioned a case recorded by Shepherd.[9] This is the record of a patient, aged 20, who had suffered with a recurrent bullous eruption of the face for four years. After much study, the reporter concluded that the eruption was feigned. The possible connection of this eruption with the menstrual epoch was discussed. The interesting feature was its localization on the face alone.

An interesting case of factitious origin was described by Stelwagon.[10] This is the record of a female patient, aged 19, who had produced lesions on the forearms and legs, over a period of several months, by constant rubbing with the finger. The object of the patient was not to create sympathy, but there was an irresistible impulse to rub the skin, which apparently created an agreeable sensation.

Another instructive case was recorded by Weber.[11] This patient, a woman aged 37, was suffering with hysterical functional nervous affections, and was also a malingerer. The lesions consisted of bullae, with superficial ulceration, and were located on the front of the abdomen. Their duration was seven months. A starched bandage was applied, in order to detect deception. The bandage, however, became loosened, probably by deflating the abdomen, by means of which the patient was able to introduce her hand under the upper anterior portion. In this area bullae developed, and on examination some dark specks were detected in the raised epidermis over the bullae. These specks proved to be powdered cantharides. In spite of the finding, the patient would not acknowledge the deception.

Weber also reported a patient who produced spurious Roentgen-ray ulcers by means of hydrochloric acid. In this patient an appendectomy had been performed, as well as three other abdominal operations. On account of menorrhagia, she was treated with Roentgen rays, and later developed ulcers which spread over the whole abdomen, and which were produced as stated above.

Shepherd[12] recorded four cases which are instructive:

1. Gangrenous patches on the skin of the arms, in a woman aged 30, produced by some heated object. No hysterical stigmata.
2. Woman, aged 44, suffering with a bullous dermatitis, produced by some blistering agent, probably cantharides, phenol, acetic or other acid; the object was to avoid disagreeable work.
3. Woman, aged 28, hysterical stigmata present. Bullous lesions produced by cantharides. Object, to excite sympathy and interest.
4. Woman, aged 24; no hysterical stigmata. Gangrenous patches on foot and leg. Agent used not discovered. Original lesion due to an accident, subsequent ones to design.

Pernet[13] recorded two cases of trichotillomania, associated with other factitious manifestations. These occurred in young women aged respectively 20 and 22.

Illustrating each side of the contention are cases recorded by Wende.[14]

> The first case, in a young woman aged 17, had its beginning following the application of phenol to a wart situated on the back of the right hand. Subsequent to this, gangrenous areas began to develop on other parts of the body.
>
> In the second patient, aged 18, the disorder followed an accident sustained while sleigh-riding, the first lesions appearing as a group of vesicles on the nates. In this case, the recurrences were always confined to the original area. The peculiar location of the lesions, in a situation hard to reach by the hand, and the character of the lesions, placed the case, in the mind of the reporter, beyond the possibility of being factitious.

Two affections described under other titles should be mentioned here. Under the title "Zoster gangrenosus atypicus," Kaposi[15] described two cases of cutaneous disease occurring in hysterical young women. He later described others, making a total of eleven.[16] In these cases, recurrent lesions appeared, consisting of grouped vesicles and papules, followed by crusting. In some cases, by coalescence, large areas of gangrene were produced, which, after the sloughs had separated, were followed by cicatrices, which often showed keloidal developments.

Rona[17] (Budapest) stated that in 1889 he reported a case of zoster gangrenosus atypicus, and attempted to solve its etiology. Since that time his views had radically changed. In four of the five cases under his observation there were definite hysterical stigmata; in four, the lesions followed a trauma, two from a needle wound of the finger; one followed operation; one followed abortion. In two of the cases, caustic soda was found secreted. That all the cases were identical with those described by Kaposi he believed there was no doubt, and that the differences in the descriptions of the disorder are due to the different chemical substances used in their production, and the concentration, mode and place of application.

Recently, a group of cases has been described under the title "dermatitis symmetrica dysmenorrhoica," by Matzenauer and Polland.[18] They report six cases, occurring in persons of unstable mentalities. The lesions were usually linear, and developed rapidly. The authors set up a hypothesis explaining the spontaneous occurrence of these lesions on the ground of some change in the internal secretions.

Kreibich[19] discusses the same subject, but proposes the term "gangrenosa neuroticum dysmenorrhoica."

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[6] Van Harlingen: Recent Contributions to Our Knowledge of the Hysterical Neurosis of the Skin, Jour. Cutan. Dis., 1903, xxi, 403. An excellent summary of recorded cases of factitious and spontaneous eruptions occurring in neurotic patients, with extensive bibliography.

[7] Corlett: Jour. Cutan. Dis., 1897, xv, 551.

[8] White: Jour. Cutan. Dis., 1903, xxi, 415.

[9] Shepherd: A Case of Recurrent Bullous Eruption of the Face, Probably Pemphigus Hystericus, Jour. Cutan. Dis., 1906, xxiv, 164.

[10] Stelwagon: Arch. Dermat., 1882, viii, 236.

[11] Weber: Brit. Jour. Dermat., 1912, xxiv, 78.

[12] Shepherd: Jour. Cutan. Dis., 1897, xv, 543.

[13] Pernet: Brit. Jour. Dermat., 1915, xxvii, 85.

[14] Wende: Dermatitis Vesico-Bullosa et Gangrenosa Mutilans, Jour. Cutan. Dis., 1900, xviii, 548. Report of two cases having a hysterio-traumatic origin.

[15] Kaposi: Arch. f. Dermat. u. Syph., 1889, xxi, 561.

[16] Kaposi: In Crocker's Diseases of the Skin, Ed. 3, 1903, p. 534.

[17] Rona: Arch. f. Dermat. u. Syph., 1905, lxxv, 256.

[18] Matzenauer and Polland: Arch. f. Dermat. u. Syph., 1912, cxi, 385 and 454.

[19] Kreibich: Arch. f. Dermat. u. Syph., 1913, cxiv, 165 and 172.

Friedeberg[20] describes a case, under the title "dermatitis symmetrica dysmenorrhoica," of a woman, aged 30, who suddenly developed bullous lesions on the cheek, which in the course of a few days became crusted and healed without scarring. At the next menstrual period, a similar process occurred on the trunk.

Mathes[21] discusses the etiology of these cases.

Török[22] (Budapest) discusses the cases of dermatitis symmetrica dysmenorrhoica, and concludes that the most probable explanation of these cases is the presence of a factitious element.

DIAGNOSIS

The diagnosis is usually not difficult to one familiar with cutaneous disorders, since the lesions, though of a simple inflammatory nature, are different from those of any recognized disorder. The most important points are the following:

The lesions occur within reach of the patient's hands, and are usually most numerous on regions easily accessible to the right hand. These include the anterior surface of the body, the left arm, forearm and hand, the lower extremities, and the right side of the face and neck. As a rule, the palms and soles, eyelids, mouth, nose, ears, scalp, and genitals are spared.

The lesions are always sharply outlined, and of unusual, often fantastic, shape. They appear suddenly, at irregular intervals, usually one or two at a time, and run a fairly rapid course. When fluid caustic is used, it frequently happens that one or more drops run down the skin from one of the lesions, leaving a characteristic streak, which is usually lighter in color and shows a more moderate degree of inflammation than the patch from which it depends. When the caustic is applied with a needle or pin, as is frequently the case in gangrenous areas, the border shows a finely jagged or serrated edge, made by the numerous punctures in the advancing border. When gangrene is present, it is usually very superficial, and is separated from the normal skin by a narrow, vivid red line. The fingers, nails or some article of clothing are often stained by the agent employed.

Subjective sensations, usually pain and burning, may be greatly exaggerated by the patient, who will cringe or jump at the slightest touch during the examination, and will complain bitterly about the distress caused by the simplest and lightest of dressings. On the other hand, some of the areas are largely anesthetic, and some of these individuals like to exhibit their ability to endure pain. Many of the patients enjoy mystifying their medical attendants by predicting, from twelve to twenty-four hours in advance, the exact areas on which new lesions will occur, claiming that during this period they experience in these areas a sense of heat and burning and other abnormal sensations.

The impulse one has is to confront the patient immediately with *the charge, and there are several* who advocate such procedure. While occasionally this terminates happily, in the majority of cases it probably would fail, in which case it would work an injustice on the patient, her friends and the attending physician. A plan which I pursue is to instruct the patient in methods of treatment, and during the instruction impress her with the idea that there is no question whatever as to what has produced the lesions, and that if she will faithfully apply the remedies suggested, and as faithfully avoid using anything else, she will make a prompt recovery. Then have the patient watched with care, using at a later date, if necessary, fixed dressings; that is, dressings which cannot possibly be removed without detection; or, if driven to extreme measures, take the patient to a hospital, where she can be kept under strict surveillance, both day and night, when, by complete disappearance of the lesions and the nonappearance of new ones, the diagnosis is proved. This, however, does not reveal the causative agent. In an intelligent patient, the appeal to her pride and self-respect has weight. In certain of the cases no impression is made by such an appeal. It may be that a number of these patients belong to the group described by Pernet and Towle, those who really do not know *that they have inflicted the injuries.*

Further aids to the diagnosis may be found in the general characteristics of these patients, the unusual history of the disorder, the discovery of anesthetic areas, especially of the fauces and conjunctiva, and other evidences of hysteria.

CASE REPORTS

Case 1.—The patient whose lesions are shown in the illustration was being attended in one of the hospitals of the city for ulcerated, gangrenous lesions occupying the entire length of the left hand, forearm and arm. I saw her in consultation at the hospital. She had been examined by a number of physicians, and apparently was much pleased at the prospect of having another examination. There were several physicians and hospital attendants in the room when the patient was examined. During the undressing of the arm, the following history was elicited: At the beginning, an apparently serious lesion occurred on one finger. A physician was called, who dressed the lesion and stated that he would redress it the following morning. On the second *visit, a similar lesion was found immediately above the* bandage. This was dressed, and, either daily or on each alternate day for several weeks, new lesions continued to appear immediately above the bandage. They were painless, occurred *suddenly, always developed during the night,* and the first lesion seen by persons other than the patient was a bulla. The bulla would soon become dark, gangrene would follow, and either deep or superficial ulceration result. At the moment of examination, lesions varying *from superficial* scars to deep ulcers, through the various stages, were present. They were irregularly shaped, and varied in size from that of a split pea to that of a silver dollar. During the time the dressings were being removed, the lesions were carefully examined, but no questions were asked the patient. She, however, was apparently enjoying the situation and attention. When the dressings were all removed, with no preliminaries, the patient was informed that the lesions were due to the application of phenol made by herself. She was so surprised that before she could master her emotions she admitted the deception, and finally stated that by accident she had learned how to produce the lesions with phenol, and continued the process, as it relieved her from the disagreeable duty of practicing at the piano.

Case 4.—Miss I. V., aged 22, of nervous temperament, had had the cutaneous disorder one and one-half years. The history obtained from the patient and her mother was as follows:

In the beginning, a finger was burned with nitric acid. The lesion remained open for some time. Three months later an ulcer appeared in the same area. Six months after the beginning, curettage was performed and necrotic tissue removed. One month after the curettage, an incision was made into the hand, after which the lesions disappeared, excepting a small spot. Two months subsequently, the record states, the patient was in good condition. One month later lesions began to reappear. New ones occurred still another month later, and two months subsequent to this they began to appear higher up the arm. The lesions all occurred suddenly and began as blisters.

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[20] Friedeberg: Arch. f. Dermat. u. Syph., 1913, cxiv, 173.
[21] Mathes: Arch. f. Dermat. u. Syph., 1913, cxiv, 185.
[22] Török: Arch. f. Dermat. u. Syph., 1913, cxiv, 185.

On examination, the following was noted: The dorsum of the left hand was erythematous, and showed scars from old incisions and lesion relics. One active lesion was present on the side of the face. This was irregular in outline and covered with a brownish eschar. The entire arm and forearm, left side, showed superficial atrophy and scar formation, in irregular areas.

The mother was informed of the diagnosis, and was good enough to cooperate in trying to determine what was being used. Her physicians were also informed, but were skeptical as to the possibility of the disorder being self-inflicted. Eight months afterward, one of the attending physicians reported that, after compound solution of cresol had been found in the patient's stocking, she confessed that the lesions had all been self-inflicted. Following this disclosure, recovery ensued.

Case 5.—Miss F. R., aged 15, had had the cutaneous disorder seven months. The patient was of a highly neurotic temperament and showed marked evidence of hysteria. The disorder began as an abrasion on the left hand, from which lesions spread up the forearm. The early lesions were vesicles filled with semipurulent material. Each new attack was accompanied by marked elevation of temperature, the family stating that it reached as high as 108.5.

Bullae continued to appear from time to time. The day before the patient was examined, a new lesion appeared on the forehead, at which time a temperature of 106.5, as recorded by the mother, was reported. There were never any lesions in the mouth. The patient vomited considerably, but had no nausea. She frequently had spells of fainting; these always occurred when she was with another person.

The patient was right-handed, and was apparently normal mentally; there was no pharyngeal reflex; the corneal reflex was much reduced.

On the forehead a dime-sized, irregular, pigmented, superficial burn was present; healed lesions were present on the left arm; there were irregular hypertrophic scars, with similarly shaped and circular, well-defined, superficial, dried, burned areas on the right arm, in various stages of healing.

Temperature taken at time of examination was normal. Leukocyte count was 8,000. Visual fields were normal and equal.

The diagnosis of factitious dermatitis was made and forwarded to the patient's attending physician. A letter received from the latter some months later reported that under the care of a competent trained nurse the diagnosis was confirmed, that phenol was found to be the agent used, and that the patient had made a complete recovery.

Case 7.—A strong, healthy, Scandinavian girl, age 22, presented a peculiar eruption occupying the anterior surface of the right arm from the wrist to a short distance above the elbow. Three weeks prior to examination, she had pricked her finger with a pin; it became sore and painful, and her physician feared blood poisoning. A few days after the accident, she fainted in church. Fearing serious complications, she was taken to a hospital, where she remained two weeks. A day or two after entering the hospital, a small red area, more or less covered by blisters, appeared, which darkened in color and resulted in a few days in superficial necrosis. Several of these areas appeared on the forearm while the patient was in the hospital.

Examination showed the anterior surface of the right arm (the patient was left-handed) to be occupied by about seven separate rectilinear areas of altered integument. These were placed with their long axes in a transverse direction. Roughly estimated, their size averaged from 2½ to 3 inches by 1 to 1½ inches. Each was separated from those adjacent by a strip of normal skin. The borders were well defined, but in places irregular and frayed out. The lesion nearest the hand, opposite the carpal joint, was practically healed, leaving a scar; the uppermost band was the most recent. The lesions from above downward showed the various stages of evolution and involution of a dermatitis due to the application of a solution of phenol. She had evidently first made an application to the wrist, and, being ignorant of the power of phenol, had used enough to cause a fairly deep burn, which resulted in superficial necrosis and ultimate scarring. While lesion No. 1 was under treatment, she caused No. 2 to appear just above the bandage. No. 3 was produced above the bandage which included No. 2, and so on up the arm. The later lesions were noticeably less severe than the first.

It was learned later, from the girl's history and her conduct, that she was a degenerate. She and her sister had the same lover, and, thinking that her sister was receiving too much attention from him, she had taken this means of attracting his interest and sympathy. The lover departed, and no more lesions appeared.

Case 10.—The patient, Mrs. J. H. W., was 30 years of age, and fond of society. She had been married twelve years, but had never been pregnant. Her husband, who was 25 years older than she, was a minister and circuit-rider, his work taking him away from home a large portion of the time. She was a well-nourished woman of average weight, with some tendency toward hysteria, her physician stated. In December, 1905, she had a hemorrhage from the uterus, which examination showed had come from an ulcer of the uterine wall. Diagnosis of adenocarcinoma was made and the uterus curetted.

The patient stated that the first skin lesion appeared, simultaneously with the hemorrhage from the uterus, as a small pinkish patch on the face. This appeared suddenly. The color gradually deepened for two or three days, then slowly faded out, leaving a stain, which eventually disappeared entirely. Later, numerous patches appeared from time to time on different parts of the body. During a year and a half she had rarely been entirely free from them for more than a week or two at a time. On the body, many of the later lesions had been of rather severe type, the redness being followed by the appearance of numerous small vesicles, or larger bullae. The contents of these bullae, if allowed to flow over the sound skin, produced new lesions.

On examination, the face showed a number of irregularly shaped but sharply outlined areas of erythema, in varying stages of involution. There were no scars on the face. On the body, especially over the breast and on the left arm and forearm, were numerous sharply outlined areas of irregular, and occasionally fantastic, shapes in varying stages of evolution and involution, including acute erythema, vesicles and bullae on hyperemic bases, superficial necrosis, pigmentation and, finally, a few scars.

She had been in the hands of a dozen or more physicians, and stated that she was generally known in her section of the country as "the medical puzzle." She said she always knew from twelve to twenty-four hours in advance, from certain burning sensations, exactly where the lesions would appear; and that the drawing of a blunt instrument over her skin, as had been done by several physicians to test the reaction, was always followed, in from twenty-four to thirty-six hours, by a new lesion. She was frankly told what the trouble was, but denied all knowledge of how the lesions occurred. Six months later, we learned that there had been no recurrence of the lesions.

Case 12.—A woman, aged 19, married two months, applied for treatment of peculiar lesions which had appeared on her breasts, left upper arm, neck and face. They had been coming, one or two at a time, for five weeks. The first one followed an accidental scratch, to which she had applied an antiseptic liquid given her by a druggist.

On examination, the lesions were seen to be chiefly small, irregular, sharply defined patches of erythema. On the breast were several small bullae surrounded by a narrow hyperemic zone. Subsiding lesions were followed by pigmentation, but no scars were visible. From the under margin of a triangular hyperemic area on the breast there extended downward an irregular band from one-eighth to one-quarter inch wide and 1½ inches long. The inflammatory process forming this band was less severe than that on the area above, and was undoubtedly produced by a drop of liquid escaping and running down over the skin.

The woman had always lived in the country, had never been away from home before, and had come immediately after her marriage with her husband to the city, where they had no friends or acquaintances. He was busy with his work all day, and she was, in consequence, very lonely. The nature of the condition was explained to the husband alone, and he very sensibly recognized the situation and generously stated that he did not blame the girl. He sent her home for a few weeks, and a year later reported that everything had come out all right, and he was greatly obliged for the advice given.

Case 20.—A girl, aged 18, apparently in good general health, reticent, at times almost sullen, in association with her companions, was a probationer in a Sisters' hospital. While assisting in dressing a patient with a number of ulcers on the skin, she pricked her finger, and it became infected. The lesion was later incised and curetted, and probably healed. Six months later, the tip of the finger became inflamed, and in two or three days turned black. With hot fomentations, the lesion cleared up. During the next six months, the occurrence was repeated several times, until the first phalanx appeared to be entirely gangrenous and was amputated. Two months later, the second phalanx of the same finger became involved in the same manner and was amputated. Following this, she remained well for three months, when the remaining phalanx of the finger became gangrenous, and was amputated by the same physician. Three weeks later, gangrene began to spread over the back and sides of the hand. On account of the rapidity of the process, the surgeon contemplated removing the hand at the wrist, an operation which the patient begged him to perform to save her life. Before the operation was performed, however, a consultation was held. On examination, the gangrene was found to be superficial, and was bounded by a narrow red line. The advancing border showed a finely jagged or serrated edge, in which the marks of individual punctures could be detected. There was slight anesthesia of the fauces and conjunctiva, and the general condition of the girl suggested hysteria.

The patient denied having made any application herself, but under fixed dressings made a complete recovery, and later confessed to the Mother Superior that she had produced the trouble herself with a needle and pure phenol.

Case 23.—Miss A. Y., a girl aged 17, in good general health, was the eldest of nine children, and, on account of the death of her mother two years previously, had had charge of the entire household.

Six weeks previous to the examination, her finger was scratched on a barbed wire. The skin turned black three days later, and blisters appeared on the hand and arm. These began as pimples, which became dark in three days, and gradually became larger.

On examination, there were seen on the outer surface of the left forearm and on the wrists and hands eight or ten irregularly shaped patches, from 1½ to 2 inches in diameter. There were two acutely inflamed areas, with an irregular, finely jagged or serrated outline, thickly covered with pinhead or slightly larger vesicles. These were of but two or three days' duration. Other similar areas were covered with black, gangrenous crusts, surrounded by a narrow red line. There were two rather thick, irregular, pigmented scars. The tissue destruction was deeper than that seen in most of these cases.

On confrontation, the patient admitted that she had produced the lesions with a pin dipped in lye. A letter received some months later from her family physician stated that the patient returned home and made a complete recovery.

Case 26.—Mrs. J. M. W., a married woman, aged 33, and apparently in good general health, had been seen by many physicians, a number of whom were impressed by the fortitude with which she bore pain. She was equally impressed by the fact that none of her physicians had discovered what the trouble was.

Two and a half years prior to this examination, which was made by Dr. Montgomery, she had all the symptoms of pregnancy up to the seventh month, when suddenly the whole thing disappeared.

The cutaneous disorder was of two years' duration, and had begun in the breast. A month later lesions appeared on the nose. The trunk soon became involved, and finally the limbs. The lesions were accompanied by burning and itching sensations. On the body they began as a blister on the sound skin, or on a slightly reddened area. Frequently, her face had been nearly well. The lesions always appeared suddenly.

On examination, there was found a superficial dermatitis of the nose and cheeks, in irregular, sharply outlined areas, covered with a thin edge of scales or crusts. On the upper surface of the breasts and above them were numerous irregular, sharply defined, erythematous spots, one-quarter to three-quarters inch in diameter. Some of these spots showed slight vesiculation or a superficial necrosis. Areas were seen in all stages of healing and of resulting pigmentation. They were most numerous over the breasts, the abdomen and the left arm. On the breasts were two small areas of erythema, from the lower border of which extended the characteristic streaks caused by the dropping of the fluid over the skin. There were several lesions about the umbilicus, others in the groin and on the inner surface of the thigh.

Her attending physician was informed of the nature of the trouble, and after using fixed dressings for a time he discussed the matter with her. The patient agreed that she would do as he directed, but she promptly put herself in the hands of another physician.

Nearly a year after this examination, I saw the patient in a clinic given before a medical society, when the diagnosis of factitious dermatitis was independently made. The difficulty in making the diagnosis at this time lay in the fact that the patient had become more skilful and was now producing perfectly circular, regular areas, and was not spilling any of the fluid. At least six or eight members of the society discussed the hysterical manifestations seen by them in this case, and all were agreed as to the factitious origin of the lesions.

Case 29.—The record of this patient, Miss M. B., aged 27, includes four or five visits to the Presbyterian Hospital, one or more to the County Hospital, and the attendance of several physicians.

About May, 1910, the patient received an injection of tuberculin in the left arm above the elbow. Three days later, the arm swelled, and the patient was sent to the dispensary for treatment. A salve containing phenol was applied, and the patient returned home. Shortly after this, lesions began to occur, extended down on the arm, later appeared on the left leg, and subsequently, as time went by, on the entire trunk, right arm, and all parts of the body within reach of the hands.

I saw the patient shortly after the onset of the trouble. It was evident that the original phenol salve had given her the idea and the material with which to carry it out. She was hysterical, almost always moderately deaf, sometimes entirely so, and was capable of marked imitation. During the years she had been under observation, the type of the lesions had changed. It is likely, therefore, that the materials used had been modified.

Monday, Nov. 4, 1910, the patient was seen in the clinic at which time the lesions were present on the left arm, the trunk, the foot and the lower limbs, the right arm being free. Up to that time she was supposed to be deaf. In the clinic the case was demonstrated, and attention was called to the absence of lesions on the right arm. November 7, three days later, the patient again attended the clinic, and entered the hospital on the same day. At this time she had a number of lesions on the right arm, which apparently showed evidence of suggestion. The house physician, Dr. Tope, made these notes on that day:

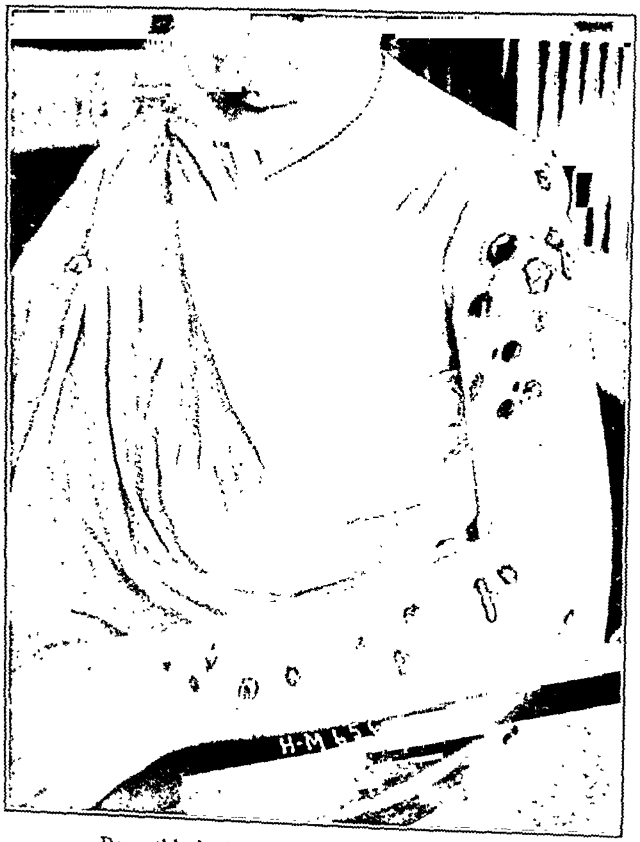
"Lesions situated on both arms, from shoulder to wrist. They consist of open ulcers, gangrenous areas, some covered with dirty-gray sloughs, other ulcers that are healing, and many scars, some of which are keloidal. The patient professes ignorance as to the cause or duration of the lesions;

professes to be deaf, but can hear much better than she admits. Speaking in ordinary tones to her, she not only hears but understands. If asked if she understands, she says 'No.'"

Nov. 1, 1912, when the patient was again in the hospital, Dr. Pincoffs, the house physician, wrote a description of the cutaneous lesions much as given above.

The record further states that the patient mentally was at first in an antagonistic attitude, but during her stay at the hospital she became more cheerful and went about the ward conversing with other patients. Deafness and blindness were complained of, but these later disappeared. The question of a certain amount of true deafness was not definitely settled, but the amount varied from day to day.

During one of her temporary visits at the County Hospital, she saw numbers of syphilitic lesions in inmates of the same ward. After leaving the hospital, many of her lesions assumed the peculiar circinate outlines which she had witnessed at the hospital.



Dermatitis factitia, induced by phenol (Case 1).

She was examined as to her mental state by Dr. Bassoe, who discovered marked evidences of hysteria. There were no other neurologic changes.

The patient had been under the care of Dr. Mackey during the greater part of this time, and it was the observation of all that during her residence in a hospital the lesions always cleared up. Immediately on her release they would recur. As they were always produced at home, and as we had had no assistance while she was there, we had no means of ascertaining the agent employed, except the one originally suggested, phenol.

SUMMARY

Of the thirty-four patients described above, thirty were females. Fifty per cent. were under 22 years of age. Trauma preceded the lesions in twelve cases. Of these, two had been burned with acid, two had had antiseptic applications made by a druggist, and two had been treated with phenolized salve. Of the thirty-four, thirteen confessed and made an immediate recovery; one case was proved under the care of a nurse, and three under fixed dressings; one patient completely recovered after being confronted. Of the total number, twenty-five made complete recovery, three disappeared, one was a degenerate, two gradually recovered after a long time had elapsed, and in two cases the lesions continued. One patient never had lesions while under observation in the hospital, but continued to have them outside.

Of the thirty-four, it was proved that fourteen used phenol, four probably used phenol, one used compound solution of cresol, one phenol and other substances, one croton oil, one lye, one sandpaper, one tobacco, one the electric needle and unknown but liquid applications, six entirely unknown substances, and three unknown liquids. It is interesting to note that several patients recovered after being confronted with the materials they had used, even though denying their use. Change of scene in one case induced recovery, and in another the departure of the person whose presence had irritated the patient. In only four of the group was the diagnosis not positively proved, either by confession or by complete recovery of the case under fixed dressings or constant supervision. In the four, however, the evidence was so strong that there was practically no doubt as to the diagnosis.

CONCLUSIONS

First, it seems probable that the major portion of cases described as pemphigus gangrenosus are in reality examples of factitious dermatitis. That the major number of cases recorded under the title "zoster gangrenosus atypicus" (Kaposi) are of the same type, and also those more recently described under the title of "dermatitis symmetrica dysmenorrhoica," seems probable.

Second, while the disorder is comparatively rare, it probably would appear more common if recognized more generally. As stated in the beginning, the family physician will generally, on account of personal acquaintance with the patient, refuse to admit even to himself the possibility that this particular patient would produce such lesions.

On the recognition of the disorder, the admission of the patient as to its cause, and the cessation of the practice, immediate recovery generally takes place; if not, careful attention to the measures detailed above should be employed, when the desired result is accomplished. Treatment is a simple matter, and requires only the application of the various remedies indicated by the stage of dermatitis present. The only difficulty in any case is to prove the diagnosis.

25 East Washington Street.

ABSTRACT OF DISCUSSION

Dr. Howard Morrow, San Francisco: I have had five or six of these cases in the past ten years. They have all been in women. The majority of the patients have been over 30 years of age. I can recall two who were to me of great interest: One was that of a telephone operator. She disliked her work and stayed away by producing a phenol burn on the arm. Her family had sympathy for her and she was kept at home. She applied the phenol as a compress and produced deep sloughs. Another girl was seen in consultation with Dr. Buckley some time back. She applied phenol to different areas on her leg. She told her folks she was run down and would have to take a trip to get rid of them. After she returned from the trip, these lesions disappeared. After a time they started again. I suggested zinc oxid paste, as the patient cannot remove that, and reapply it. Each day after the application of the paste, new lesions would appear in the neighborhood. After this was done four or five times, Dr. Buckley became annoyed at the patient and he said to her, "You do this yourself and it must be discontinued, or I will report it to your family." She at first denied this but afterward admitted it. No more lesions occurred.

Dr. Lasher Hart, Los Angeles: Dr. George Henry Fox had a case in his clinic. Dr. Fox took the patient into a room and said, "What have you been doing here?" She admitted that the lesions which she had on her forearms had been caused by rubbing salt into them, and that she was seeking sympathy from her employer. Dr. Fox confronted these patients at once with the idea that he knew the diseased areas were self-inflicted, and I have always followed out that idea in my own practice since then.

Dr. George M. MacKee, New York: As bearing on possible etiologic factors, we had in Dr. Fordyce's clinic a few months ago a case of neurosyphilis with lesions of factitious dermatitis on the chest, arms and shoulders. The interesting question was whether or not the neurosyphilis had so altered the nervous system as to produce a malingerer. As is well known, cases of malingering are at times exceedingly difficult to diagnose, and are not infrequently confused with other diseases. I recall a case in which the first ulcer developed on the back of the hand; later numerous ulcers occurred on the forearm. The case was investigated for the possibility of sporotrichosis, syphilis, tuberculosis, etc., but later the patient was proved to be a malingerer.

Dr. A. J. Markley, Denver: During the last six or seven years I have had the misfortune to observe a number of cases of this kind and believe that, as Dr. Ormsby has done, it is necessary carefully to distinguish between the two types of individuals in which this occurs; that is, the malingerer and the neurotic. In the malingerer, if the patients definitely know that you are familiar with the manner in which the lesions are produced, they may be frightened off. On the other hand, hysterical and neurotic individuals are less easily dealt with, and when accused of inducing these lesions themselves, are often led by their neurotic tendencies into practices of more serious kind. Such cases belong definitely in the hands of the neurologist. Of this type, a girl in an orphanage in Denver had become a serious charge to the good Sisters who took care of her. She had disfigured herself with some form of caustic, sparing no part of her body which was accessible to her right hand. The only part which she had been unable to reach was the scapular region of the right shoulder. When confronted with the charge of self-infliction of these lesions, she ceased to produce them, but other stigmata of hysteria occurred, and only when she had been placed under proper neurologic care was any permanent benefit obtained.

Dr. Richard L. Sutton, Kansas City, Mo.: I envy Dr. Ormsby the long list of cases which he has had opportunity to observe. The character of the lesions, the region involved, and the fact that the affected areas were usually readily accessible to the right or left hand are also suggestive. I recall a recent case in Kansas City in which a patient, a woman student, had burned herself with nitric acid. The lesions healed, but new ones speedily appeared. The superintendent of the school was a very religious woman, almost excessively so, and she would not believe it possible that a girl placed under her care would do such a thing. It was only when the matter was thoroughly sifted and the diagnosis verified beyond the shadow of a doubt that the girl was sent home as utterly unfit for the training she had taken up. So one must be as careful as possible in approaching the patient as well as her family, if the treatment is to be ultimately successful.

Dr. Oliver S. Ormsby, Chicago: In one of the illustrated cases which I intended to read, the question of autosuggestion arose. It has been thought that sometimes by autosuggestion lesions may be produced spontaneously; that is, a patient is able to bring out a lesion on the body by fixing the mind on it. These, however, are often factitious, and may be illustrated as follows: In a clinic on a certain Tuesday there was a patient who was supposed to be deaf. The lesions were all placed in regions readily accessible to the right hand, on the left side, and I called this fact to the attention of the assistants. On Friday, when the patient returned, she had lesions on the right side, including the right arm and forearm. At a later date, when in the County Hospital, she observed cases of syphilis in women having that disorder, and some months later she began to have lesions which were circinate in outline, and these lesions were supposed by several to be of syphilitic origin. The question of suggestion is sometimes important.

ROENTGEN STUDIES AFTER GASTRIC AND INTESTINAL OPERATIONS *

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Through my institutional connections I have for a number of years enjoyed special advantages for the roentgenologic study of patients after gastric and intestinal operations. My colleagues have extended many much appreciated courtesies in arranging for the postoperative studies on which this paper is based Results both good and bad have been included, the patients studied representing the work of a number of different surgeons, some of the cases coming from the most famous clinics of this country. Many of the patients had no complaint, the postoperative condition being satisfactory, at least subjectively. Others were

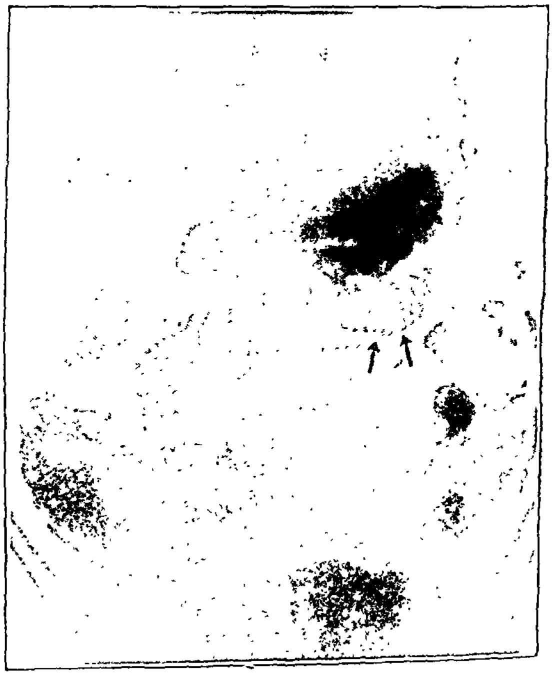

Fig. 1.—Gastro-enterostomized stomach, five hours after eating. Note the delay in the jejunum opposite the stoma. After complete clearance of the stomach, this residue in the jejunum persisted for several hours. This case is typical of the findings in a large percentage of gastrojejunostomies.

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* Read before the Section on Surgery, General and Abdominal, at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June. 1915.

* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped, addressed envelope.

referred for postoperative convalescence, and the opportunity was improved to make the postoperative roentgenologic observations. In the majority of the cases reported in this paper, the examination was advised in the hope that it would assist in ferreting out the cause of untoward symptoms. I would not insinuate that, because the majority of the cases included in the series studied have been unsatisfactory, referring especially to colonic operations, the majority of such cases with operation show similar late results; I merely report my findings on account of their obvious importance. The untoward results have been particularly frequent after operations for the relief of intestinal stasis, real or supposed.

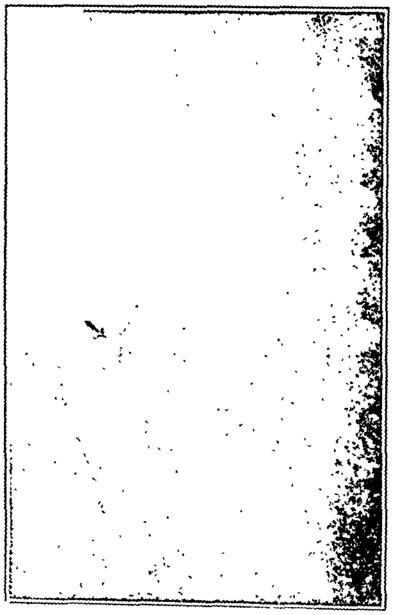

Fig. 2.—The small rounded residue often seen at the site of the appendix stump following appendectomy; also sometimes seen about the base of a diseased appendix before removal. In some of the cases showing such a residue after the barium meal, the operation had been performed years before.

ACUTE SMALL BOWEL OBSTRUCTION

Our experience during the last five years has convinced us of the value of the Roentgen examination in the diagnosis of postoperative acute small bowel obstruction, with special reference to the decision as to the advisability of surgical interference. Having accumulated the evidence in a sufficient number of cases of suspected obstruction following operation, it has seemed warranted to urge strongly the value of the Roentgen study in all such suspected cases with special reference to the existence of an obstruction, the degree of the hindrance, the location and perhaps the nature of the lesion, and whether or not the obstruction is progressive. If nonsurgical treatment seems preferable at first, the progress of the case under treatment may be observed roentgenologically.

Emphasis should be laid on the fact that it is not necessary to administer any barium or other opaque material in pursuing these studies, the observations being made possible by the gas distention of the intestine. There is, therefore, no delay incurred; and no objection can be raised to the Roentgen study of these patients on account of possible danger through delay or through the introduction of new food material into the digestive tube in the presence of possible obstruction. A Roentgen study should be required in every case of suspected postoperative obstruction.

Given a patient on the third day after operation, presenting symptoms suggestive of acute intestinal obstruction, he should be transferred to a carrier, conveyed to the Roentgen-ray department, a 14 by 17 inch plate with intensifying screen placed under him, and a flash exposure made. It must be short enough so that the patient can hold the breath during the exposure. The plate is then removed and the patient returned to his room and bed without further manipulation or inconvenience than is required to lift him onto the stretcher and back to bed again. No preparation of any kind is required; dressings are not removed. The plate is then developed and the findings may be noted as soon as it is taken from the fixing bath. Not more than twenty minutes need be consumed in the entire process.

The developed roentgenograms will reveal at once whether there is any gas distention of the bowel, and if so, whether the distention occurs in the small or in the large intestine. Acute postoperative dilatation of the stomach may be at once ruled out. Small and large bowel may be distinguished by the characteristic outlines of the gas areas. In acute colonic obstruction, the haustral markings as well as the peripheral distribution of the gas along the course of the colon are sufficiently characteristic to identify the large bowel. Equally characteristic is the appearance of the gas-distended coils in acute obstruction of the small bowel; the coils are more or less parallel and the caliber of the small intestine is increased to 1½ or 2, and sometimes 3 inches. It is seen that the distention is not confined to a short segment of the intestine but involves one or more feet of the small bowel, usually many feet. A certain amount of postoperative distention of the small bowel is frequently noted where there are no symptoms suggestive of obstruction, but in the serious cases the degree of distention is at once apparent and suggestive. The serrated contour of the bowel is characteristically different from the contour of the colon due to the markings of the haustra coli;

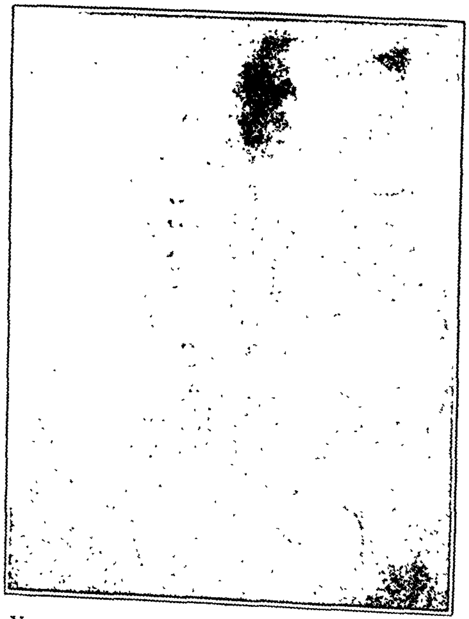

Fig. 3.—Very marked distention of the colon with gas in a case thought to be acute small intestinal obstruction. The gas distention was relieved by washing out the colon, and the administration of pituitary extract. The distribution of the gas and the characteristic markings of the bowel outlines indicate colon rather than small bowel.

so that we are at once able to recognize and differentiate acute postoperative gastric dilatation and obstruction in the large or small intestine.

Observation of the cecal region is especially helpful, for if the cecum contains gas, it is not likely that the obstruction is in the small bowel. If the gas collections, as above described, are seen to occupy the middle of the abdominal shadow while the flanks are gas free, it is probable that the obstruction is in the lower ileum, though not so low as the ileocecal region. When the gas areas occupy the true pelvis and the middle of the abdominal shadow, one may suspect the ileocecal region. Intussusception may be discovered by colonic injection with an opaque material. Early physical findings in these cases are very difficult to demonstrate with surety, whereas the roentgenologic findings may be demonstrated much earlier, and gain in surety as the gas distention progresses.

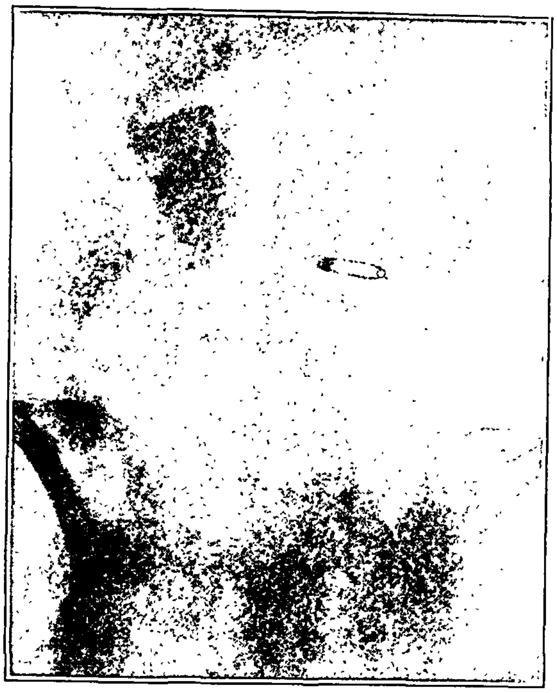

Fig. 4.—Acute obstruction high up in the small intestine, somewhere near the junction of the jejunum and the ileum. Note the absence of gas-distended coils in the lower half of the abdominal shadow.

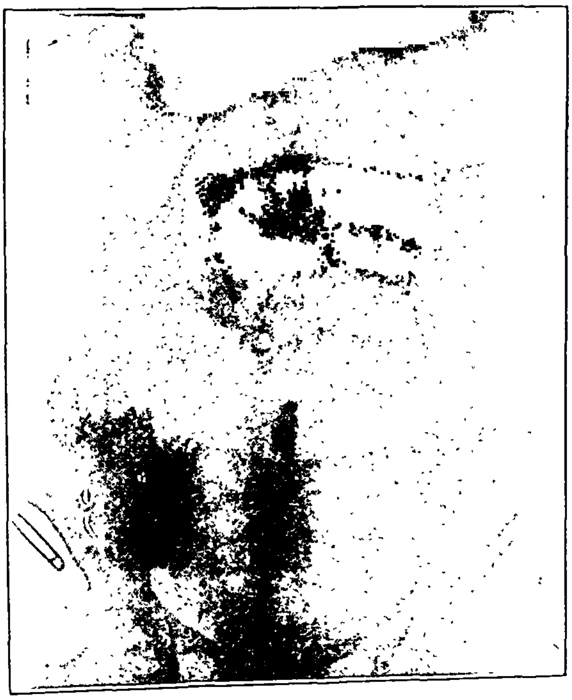

Fig. 5.—Marked gastric dilatation. Acute obstruction low in the small bowel, yet a little distance above the ileocolic junction. One determines this by the distribution of the gas-distended coils. The trace of barium in the cecum remained there from a preoperative barium meal study.

If the observation of the gas-filled bowel (without the ingestion of barium) does not make clear the location of the obstruction, time will be saved by proceeding at once to the administration of the barium enema to rule out colonic obstruction. If the entire colon fills, it is then recognized that the obstruction must exist in the small bowel. If the findings thus far are still indecisive, and the clinical symptoms are not yet clear, with the permission of the surgeon a small amount of barium sulphate, say half an ounce, may be administered by mouth in any medium which the patient will take. These cases are usually also so doubtful from the clinical standpoint that final decision as to operation is postponed in any case, and there is ample time for some of the barium to pass on into the small intestine. After a little experience, however, it is quite unnecessary to administer any barium at all by mouth, the decision being rendered on the appearance of the abdominal shadow with reference to the character and distribution of the gas areas which it may present.

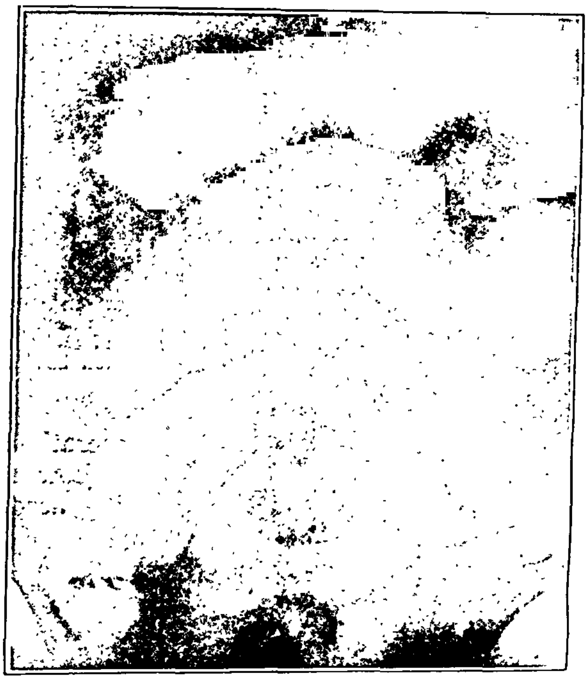

Fig. 6.—Very high grade of acute obstruction near the ileocolic junction. The dilatation of the entire small bowel in this case was extreme.

GASTRO-ENTEROSTOMY

To Cannon belongs the credit for some of the earliest Rœntgen studies on gastro-enterostomized patients. Until a few years ago gastro-enterostomy was looked on as a drainage operation, and it was the effort of surgeons to make the anastomosis as near as possible to the lowest point of the stomach. This idea was based on the conception of the stomach as a passive reservoir from which food was discharged more or less under the influence of gravity. Cannon's studies on the movement of food after gastro-enterostomy were very carefully carried out and constitute a classic to which no exceptions can be taken.

There are, however, two new points to which I should like to direct attention. It will be recalled that Cannon and Blake from their experimental work concluded that the stoma should be fairly large and near the pylorus—that conditions which stretch the stomach should be avoided, and that several centimeters of distal intestine should be attached to the stomach to prevent kinking in the jejunum. But when pyloroplasty was possible, these authors thought it was the operation of choice. They found that the rapid exit of food from the stomach was prevented by the formation of rhythmically contracting constriction rings in the duodenum. They believed that this activity replaced in part the function of the pylorus and also served to mix the food with the pancreatic juice and the bile. I have observed this phenomenon in two out of four cases in which a Finney operation had been done. It is interesting that analogous phenomena were noted in a large number of cases in which the ordinary gastrojejunostomy had been performed, namely, a sort of sphincter action established in the jejunum at a point varying from 3 to 6 cm. below the gastrojejunal opening. This was at first interpreted as a spastic contraction of the circular muscle of the jejunum; but in the light of Cannon's observation on rhythmic contractions of the duodenum after pyloroplasty, it seems reasonable to conclude that this contraction ring in the jejunum is purposive, serving somewhat as a sphincter.

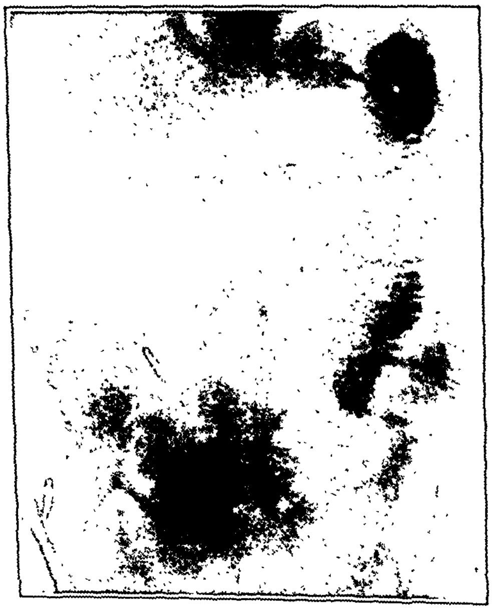

Fig. 7.—Acute obstruction in the small intestine in which the decision to operate was not made until the *second* examination, six hours after the first. Meanwhile a small amount of barium had been given, and the characteristic appearance of the small bowel visualized.

Kocher years ago made the statement that the gastro-enterostomy opening developed a sphincter action and actually underwent rhythmic contractions. It seems possible that the formation of a contraction ring in the jejunum below the site of operation may well simulate the normal action of the pyloric sphincter. Under the fluorescent screen, one sees a small fingerlike shadow gradually build down behind the gastric silhouette, simulating very much the formation of pseudopodia in the ameba. This fingerlike shadow projects farther and farther until it is suddenly constricted off an inch or two below the stomach, the pinched-off bolus passing onward into the distal small bowel, the proximal portion remaining and gradually assuming larger proportions until the distal portion of it is again pinched off by succeeding contractions. In other words, this action has in a certain degree seemed to take the place of the rhythmic contraction normally occurring at the pylorus.

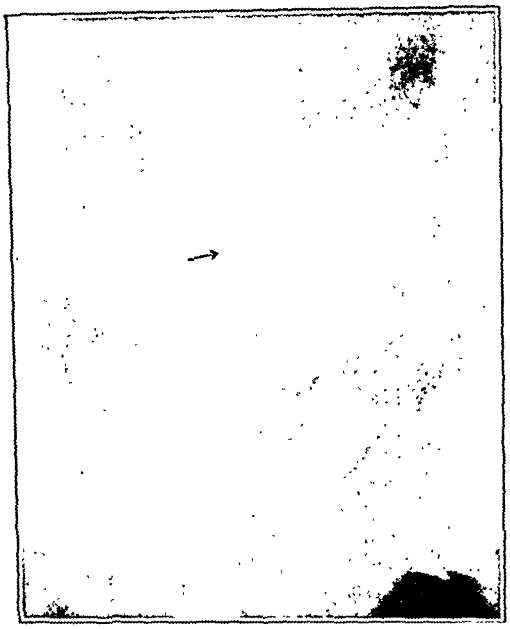

Fig. 8.—Three years after ileosigmoidostomy. The arrow indicates the site of the anastomosis. Appearance of the colon forty-eight hours after barium meal. The colon is filled by material carried backward from the rectum by retrograde peristalsis. *This retrogression of food* residues often forms large cecal tumors

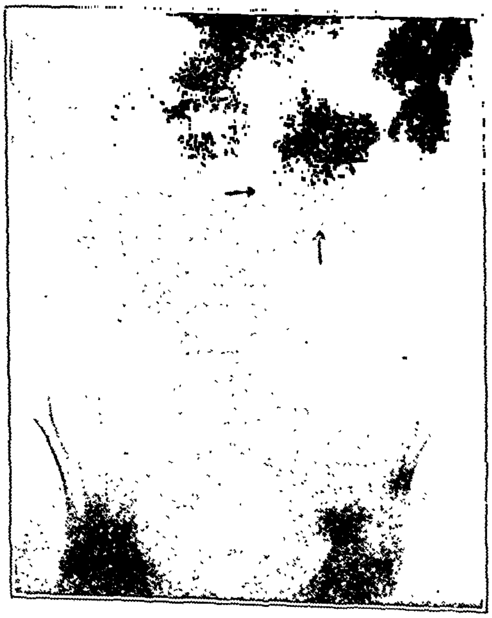

Fig. 9.—Even after removal of the right half of the *colon*, including the first third *or half* of the transverse colon, there is a tendency to the formation of a tumor in the proximal end of the remaining large intestine. In this case the barium-mixed residues in the stump are shown on the ninth day following the meal, forming an easily palpable tumor.

A second new point relates to a stagnation of food in the jejunum at or near the site of the gastro-enterostomy. Cannon, with F. T. Murphy, made intestinal resections in animals, uniting the severed intestine either by end-to-end or by lateral anastomosis. After lateral anastomosis, there occurred a more or less complete blocking of the canal by undigested detritus at the opening between the opposite loops. Necropsies on animals proved that the stasis was not due to previous accumulation of undigestible waste, but that the two apposed coils did not cooperate to propel the enclosed food, and that after an ordinary meal, food was stagnant in the region of the anastomosis. It has seemed to me that the same phenomenon is also observed after gastro-enterostomy. Especially toward the end of gastric clearance, there occurs a stagnation, apparently in the small bowel, at the site of the anastomosis, this stasis being accounted for by the inhibition of onward peristaltic activities at this point (Fig. 1).

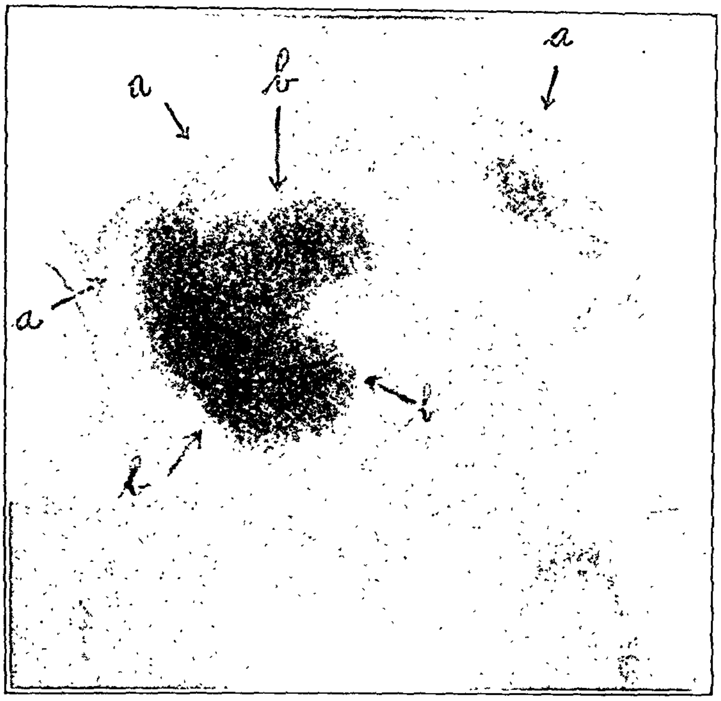

Fig. 10.—This backing up into the short-circuited colon takes place constantly, and begins immediately after food reaches the rectum. This roentgenogram, twenty-six hours after eating, shows at *a* the backed-up material in the transverse colon and cecum, and at *b* a large residue still remaining in the terminal ileum. The bowels had meanwhile moved satisfactorily (?) several times. (See Figure 11.)

APPENDECTOMY

A common cause of cecal stasis is adhesions, usually associated with disease of the appendix. It is also a fact that immediately following recovery from the operation of appendectomy, there is in the majority of cases a considerable degree of cecal stasis. The cecum retains portions of the barium meal for from two to four days, and sometimes more, although the remainder of the colon may clear itself normally. Following the attempt to expel the barium enema it is seen that the cecum has failed to contract, the propulsive ring peristaltic waves which evacuate the large bowel commencing at or above the ileocolic junction instead of at the tip of the cecum. Even at a remote period after the operation, several years later, a certain degree of cecal stasis persists in a considerable number of cases, a rounded residue of barium the size of a 25-cent piece remaining in the cecum after the colon has otherwise been entirely cleared of the barium meal. This is especially likely to occur where the patient complains of a tenderness over the cecum. Sometimes this cecal stasis was present before the operation, as shown by the preoperative Roentgen records; but that it often exists after operation where it did not exist before is convincingly shown by our series. I believe that the rounded barium residue, above referred to, occurs at the site of the stump of the appendix, and that it has some relation to the invaginating suture by which in the technic commonly employed the stump is buried. The coincidence of a point of localized tenderness on pressure with this rounded residue at the site of the appendix stump would suggest the desirability of including the least possible amount of cecal muscularis in the invaginating suture.

ILEOCOLOSTOMY

I have been especially fortunate in having been able to study a large series of cases after ileocolostomy performed for adhesions, ileal stasis, Lane's kink of the ileum, and other nonmalignant lesions. Forty such cases have been examined very carefully, operation in most of them having been performed according to the technic advocated by Lane, one of them by Lane himself. Not all the patients in this series were clinically failures, though the majority of them were examined for the cause of an unsatisfactory result. In most of them, during the early months following operation, the result was apparently worth while, and in a few striking instances the operation had seemed to work like magic; but sooner or later, usually within a year after the surgical procedure, the symptoms have begun to recur and the patient's last state is worse than the first. It should be remembered that this series of cases represents the work of more than a dozen different surgeons, most of them of national reputation—work which I believe to be on the whole representative of the best in technic which this country affords. The unsatisfactory results can, therefore, hardly be attributed to poor technic.

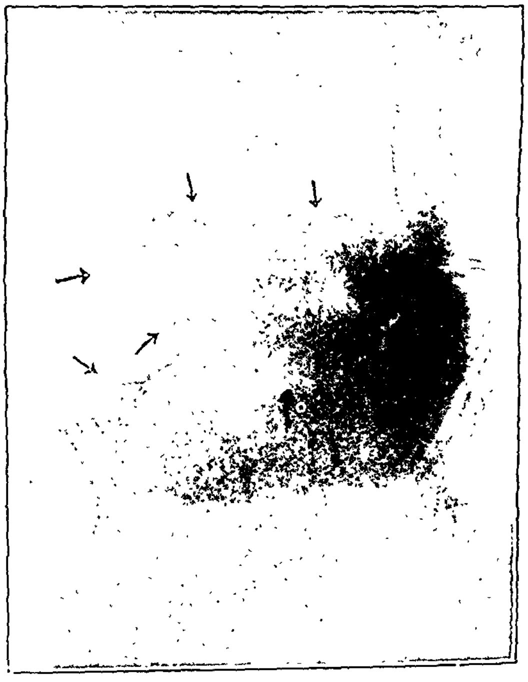

Fig. 11.—(See Figure 10.) The very marked distention of the coils of terminal ileum attending the marked ileal stasis in some of these cases is illustrated by the colon injection. Same case as in Figure 10. The arrows point to distended small bowel, the seat of stasis in Figure 10.

Excepting only those cases in which an artificial ileocolic valve has been formed, all cases have shown incompetency of the ileocolic stoma permitting the enema to flow back into the small bowel as well as retrogradely around the colon to the cecum or as far as the stump of the colon in those cases in which partial colectomy had been performed. The small bowel thus visualized has displayed a variable caliber.

not much enlarged in the recent cases, but frequently so large as to be confused with the colon itself in patients examined two or three years after the operation. In some of the roeitgenograms it is impossible to tell definitely from the roentgenogram alone which shadows are colonic and which are ileac. Of course, it is recognized that the test by enema reverses the usual order of progress of the food column, but there is also noted in many of these cases a regurgitation of *ingested* food. There is a very definite ileal stasis in most of the older patients (operation performed a year or more before the examination). It is not uncommon to find at the twenty-sixth hour a large mass in the terminal ileum simulating a colonic residue in size and caliber of the coils. The worst cases of ileal stasis, judged by the retention in the ileum of a mass of ingesta, are those cases which, when tested by the enema, show the greatest ileal dilatation and the most extensive ileal filling by the passage of the enema through the anastomotic opening. This incompetency of the stoma to enema and the ileal stasis should both be prevented by the formation of an artificial ileocolic valve by Kellogg's method. In one case reexamined three years after the operation just referred to, the artificial valve still prevented the reflux of the enema, and there was no ileal stasis.

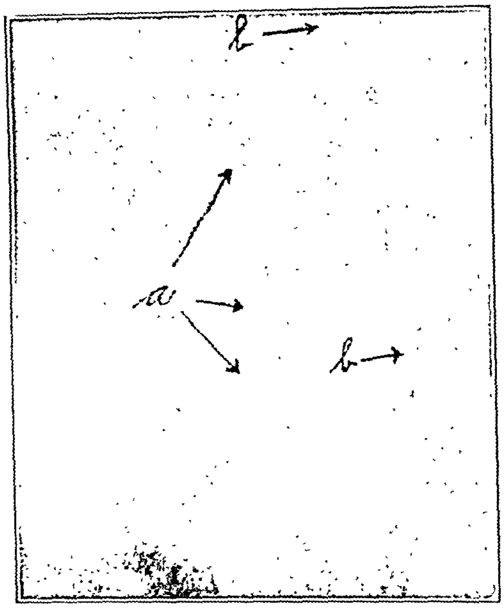

Fig. 12.—Another case two years after ileosigmoidostomy. Colon injection. Note the very marked dilatation of the small bowel shown at *a*, whose caliber equals that of the neighboring colon shown at *b*. There was marked ileal stasis in this case, shown after the barium meal. In cases of ileosigmoidostomy examined shortly after the operation, there is noted a similar insufficiency of the ileocolic orifice, but the coils of terminal ileum do not exhibit the same degree of dilatation until later.

Following the barium meal, there has been noted in every case, without exception, retrograde peristalsis carrying barium oralward as far as possible from the rectum. This regurgitation commences immediately after food reaches the rectum, and the head of the backed-up column has usually reached the splenic flexure by the tenth or twelfth hour. This retrograde movement of ingested material persists in spite of repeated enemas and in spite of repeated bowel movements, so that by the end of the twenty-sixth or even the fiftieth hour, the residues are banked up in the proximal colon, from which it is very difficult to dislodge them. I have seen a large barium-mixed mass in the cecum on the fourteenth day forming a tumor in the right inguinal region, easily palpable and visible on inspection of the abdomen. Hauchamps has recently reported a case of a nervous woman of 26 years, who had suffered all her life from obstinate constipation. To give relief some surgeon made an appendicostomy, to facilitate colonic lavage. Later the patient was reoperated, the appendix being removed and the right kidney being anchored. Still later, the patient failing to improve, ileosigmoidostomy was performed. A month after the last operation the patient was given a barium meal. There occurred evident retrograde peristalsis with the formation of a large barium-mixed fecal mass in the right inguinal region, which was still visible both on inspection of the abdomen and roentgenologically on the thirtieth day, although no opaque salt had been administered meanwhile. This stasis in the excluded colon is usually attended by the formation of distressing amounts of gas, which sometimes distend the colon to enormous proportions, resisting all efforts to dislodge it. Gas distention of the colon after ileosigmoidostomy often distorts the stomach in such a way as to produce a pseudohourglass appearance. Efforts to prevent the retrograde procession by making a kink in the sigmoid just proximal to the anastomosis result only in greater stasis and greater difficulty in dislodging the stagnant material, which is only slightly delayed in its regurgitation.

It thus appears that in a very considerable percentage of cases in which the operation of ileosigmoidostomy is performed for the relief of intestinal stasis, particularly ileal stasis, the end-result is infinitely worse than if the patient had not been operated on, at least so far as the ileal stasis and the patient's comfort are concerned. As before suggested, there is often a period of improvement, sometimes marked; but ultimately the majority of the patients under our observation exhibit a recurrence of the stasis.

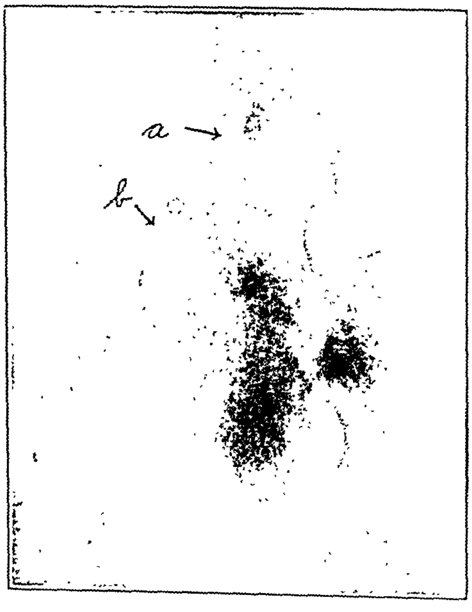

Fig. 13.—In performing the operation of ileosigmoidostomy, it is possible to make an artificial valve at the new opening, by Kellogg's method. In the case here figured, the right half of the colon had been removed, the ileum being inserted into the sigmoid with the formation of an artificial valve. The enema failed to enter the ileum. There was no ileal stasis following the meal. There was marked stasis in the blind portion of the remaining colon; *a*, stump of transverse colon; *b*, site of ileocolic junction.

To avoid a recurrence of the ileal stasis, Kellogg has endeavored to make an artificial ileocolic valve, hoping to prevent the regurgitation of food residues back into the ileum and to lessen the ileal delay. This operation, which results in the formation of a valve-like invagination of the terminal ileum into the colon in a manner resembling the formation of the normal ileocolic valve of the pig, is accomplished by a modification of the ordinary technic for end-to-side ileosigmoidostomy. In twelve cases the valve thus formed has worked satisfactorily in seven, the five failures occurring early in the series. Even in those cases in which the effort to make an artificial valve failed, the patient was no worse off than if the ordinary anastomosis had been performed. When ileocolostomy must be performed, it seems distinctly worth while to attempt the production of an artificial one-way valve, simulating the normal ileocolic junction.

To obviate the retrogression of rectal contents back into the excluded colon in these cases of ileosigmoidostomy, a number of surgeons conceived the idea of resecting the right half of the colon, including the cecum, the ascending colon and a part of the transverse colon. This operation preserved the omentum and saved the patient much of the shock likely to attend removal of the colon down to the sigmoid. In all the cases thus operated in which the patients have come to me for postoperative study, there has been demonstrated the same retrogression of colonic contents with the formation of an obstinate residue in the blind end of the stump of colon, this residue in several cases forming a palpable and visible tumor, persisting many days. In one case this tumor persisted longer than nine days, in spite of repeated daily enemas and the use of laxatives. The severity of the stasis in the stump of the colon has a relation to the length of time which has elapsed since the performance of the operation, becoming progressively worse as the months go by.

The operation of cecosigmoidostomy was also proposed as a procedure which would obviate the distresses attending the retrogression of materials up the colon under the influence of antiperistalsis. This operation appears to me an illogical and unreasonable procedure in these cases. In one instance in which it has been impossible to secure a reexamination by means of the Roentgen ray, the reports from the patient are fairly satisfactory; but in the other cases examined at some interval after the operation (three cases), there has been seen a double procession of food residues, one column traveling up the ascending colon in the normal direction and the other up the descending colon, the two columns tending to meet near the middle of the transverse colon. My friend, Dr. L. T. LeWald, who has studied such a patient two years after operation, has kindly communicated to me his Roentgen findings:

> The intra-abdominal distress and the constipation were relieved for a time, but the symptoms recurred within two years and the constipation became extreme. The bowels never moved without enema, and the gas distention of the abdomen was very distressing. Roentgen studies after a barium meal showed most of the meal going in the direction of the hepatic flexure and transverse colon instead of through the cecosigmoidostomy opening. At the end of twenty-four hours the transverse colon was filled, only a little having passed from the cecum through the artificial opening. By the end of the second day only a trace of the meal had been eliminated, the greater part remaining in the cecum, ascending colon and the transverse colon. Seventy-two hours after the meal and after repeated enemas, it appeared that the elimination of the barium-mixed residue was almost impossible, the appearance suggesting a definite vicious circle. As some of the barium passed down the descending colon and began to enter the sigmoid, it appeared to enter the cecosigmoidostomy opening into the cecum, and thence through the ascending colon back into the transverse colon. Only a small portion remained in the rectum and was voided.

The next class of cases includes those in which it was not deemed advisable to subject the patient to an extensive colectomy, and yet radical treatment was demanded. It was finally decided to make an ileocolostomy with partial colectomy, that is, resection of the right half of the colon followed by insertion of the ileum into the transverse colon as near as possible to the stump. In our Roentgen studies as well as in our clinical observations in these cases, this type of operation has given the most satisfactory results. Thus far, it would appear, both clinically and from the Roentgen findings, that this type of operation is preferable where any operative procedure at all seems indicated for stasis in the right half of the colon. Of course, for a lesion in the pelvic colon such an operation would not be likely to afford any improvement of the condition.

It would thus seem that when for any reason it appears necessary to resect a portion of the colon, making a new ileocolic junction, the ileum should be implanted as near as possible to the proximal end of the remaining portion of the colon, and an effort should be made to produce an artificial ileocolic valve. Exclusion operations are invariably followed by stasis in the excluded intestine, and blind ends, as after ileosigmoidostomy with or without partial colectomy, always sooner or later become the seat of stasis, usually with the formation of distressing amounts of gas which cannot be dislodged without great difficulty. The production of a serviceable artificial ileocolic valve by Kellogg's method is quite feasible, and in the majority of cases it is successful.

THE USE OF PLASTER OF PARIS IN MOUNTING GROSS MUSEUM SPECIMENS

WITH SPECIAL REFERENCE TO PARASITIC WORMS AND SERIAL TISSUE SLABS *

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For several years I have had more or less to do with the mounting and maintenance of gross morbid museum specimens, a large number of which were especially prepared for student-instruction purposes in large medical schools.

Suspended in the usual way by ligatures on glass frames, and after handling several times in the course of a year by instructors and students, these specimens have suffered, entailing much loss in time and some of material in repair. If of soft texture (liver), the threads have torn out, if necrotic the detritus has fallen out, and the glass frames are sometimes broken by shaking when the specimen is handled by students. If the mounting medium has become turbid, a more or less thick layer of nontransparent material

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* From the McManes Laboratory of Pathology, University of Pennsylvania.

intervenes between the eye and the specimen. Or, where the specimen is small (parasitic worms) and fastened to a glass slide by gelatin, the latter has in time lost its adhesion and the specimen dropped to the bottom of the jar.

Of late, therefore, I have aimed in the first place to prepare all specimens so that the important feature to be exhibited will appear on a broad plane surface, and will fit snugly or tightly into the container. This end is most easily accomplished when dealing with slabs of tissue (liver, spleen, tumors) which can be cut to almost any desired shape, and where a variety of variously sized and shaped containers is available. Under these circumstances, no special backing is needed. If, in the second place, the specimen has a flat surface, but is much thinner than the container, it may be held against the face of the container by some special backing, and it is with the preparation of such backings that this communication has especially to deal. Of course there are many specimens which will not permit such treatment because it might hide important features on the opposite side of the specimen, and here the older methods have to be used.

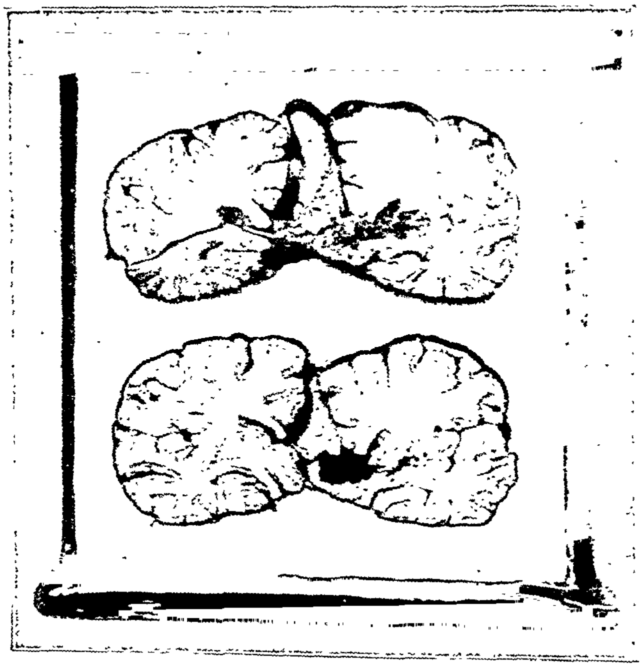

Fig. 1.—Consecutive slabs of brain, largely embedded in plaster of Paris, showing position and extent of cerebral hemorrhage.

The merits of this method are obvious. In bringing the specimen close to the eye, no fluid is interposed to become turbid or distort (especially in cylindric containers) the specimen. It matters not, indeed, so far as the specimen is concerned, if the mounting medium does become turbid. The specimen, furthermore, is held rigidly, permitting marking of the face of the container to indicate special points, and preventing the loss of soft necrotic parts. It is especially valuable in supporting (and partially embedding) slabs of brain.

The choice of an appropriate backing material is most important. Absorbent cotton has been used for a long time and is often most satisfactory. It has the disadvantage of not giving a rigid support unless very tightly packed, and then it is not sightly.

In my hands, plaster of Paris, while not ideal, has proved of great value.

Where the tissue is soft and will not stand pressure (serial slabs of brain are especially amenable to this method) it is arranged face downward on a smooth soaped surface. A wall is built around it enclosing a space about 1 cm. larger than the inside dimensions of the face of the container, which must be rectangular for the proper use of this method, and the inside of the walls now also soaped. Plaster of Paris is poured over the specimen until it is of depth equal to the narrowest anteroposterior dimensions of the container. As soon as the plaster has hardened, which ordinarily occurs in from fifteen to thirty minutes, the walls are torn down and the slab of plaster, with contained specimen, lifted from the glass. While it is still moist the edges are neatly trimmed with a knife until the slab slips snugly into the container. It is allowed to harden further, say for several hours, a moistened cloth, if necessary, being kept over the face of the specimen to prevent undue drying out. The whole is then gently slipped into the container and covered by mounting fluid. It should not be at once sealed, since bubbles will accumulate for several days, and these must be brushed off with a feather before final sealing. In the course of a year the tissue may slightly shrink from its embedding walls, but this is of no moment since it is held in place by the face of the container anteriorly and is always supported below by a plaster base. Indeed, it may be considered an advantage, permitting the inspection, though very limited, of the sides of the tissue slab.

When the tissues are firm, they need not be thus embedded, but are pressed against the face of the container by a plaster backing acting against the back of the specimen. On account of the formation of bubbles on the plaster, it has been found advisable to make up a number of containers holding their backings and keep them in stock in weak formaldehyd (2 per cent.) until needed, the bubbles being meanwhile removed from time to time.

Either rectangular or cylindric containers may be used. Most rectangular ones, however, are unsatisfactory on account of their irregular interiors, commonly flaring out toward the bottom, which quite prevents subsequent removal of the backing. This is sometimes also the case with round containers, especially the ones with necks. Where this is the case, a layer of plaster may be poured in until the "flare" is filled and allowed to harden. The backing may then be made as though there were no flare. The most suitable containers are cylindric ones (though necked ones may also be used), for then the backing may be later removed from the container, neatly trimmed, and the specimen be exactly arranged on it. This is especially desirable with long slender worms like filariae or numerous small worms like hookworms.

The containers receive about one quarter to one third of their capacity of thin plaster-of-Paris cream. It is aimed to insert such an amount that, after the container has been laid horizontally, about one third of the circumference will be covered by plaster. Where there has been a basal flare which has been filled previously by plaster, it is necessary first to soap its surface before pouring in the backing. In the case of necked containers which have ground stoppers, the stoppers (soaped) are now inserted and the containers laid horizontally. In the case of cylindric ones with loose-fitting lids for cementing, cork or rubber stoppers are inserted (also soaped), which will reach well (about 5 mm.) below the point to which the lid will reach. If this distance is not allowed, fluid will later pass by capillarity from the backing to the lid and interfere with sealing. As soon as the plaster has hardened sufficiently (from fifteen to thirty minutes), the stoppers are removed and the containers set upright. If the margins of the backing are uneven, they may be easily corrected now while the container is full of water, and after a few hours the backing may be easily pried or will spontaneously fall away from the face of the container. It is well to mark the original position of the backing by applying a label at its base, for after loosening it will slip freely around the jar, and it is desirable on account of the irregularity of the jar to be able to return the backing to its original position. This is not an important point when dealing with larger worms, but when they are small and delicate they may fail to be nicely gripped between the backing and the face if the two are not thus accurately adapted. It is between the convex surface of the backing and the concave interior of the face that the specimen is to be placed and then held there by pressure, the pressure being given by packing cotton behind the backing.

Since a dark background is often desirable, a rectangular piece of black photographic paper is fitted over the convexity of the backing sufficiently large to cover it well and hide it, and the whole stood away in weak formaldehyd until needed.

If the specimen is dark, the black paper is withdrawn and discarded, the glistening white backing affording a splendid background. If pale, the paper is brought over the label marking the original site of the backing. In either case the backing is brought over the label, and a pledget of wet absorbent cotton gradually pushed behind it to the bottom of the container, sufficiently large to push the backing snugly but not tightly forward to the face and anchor it. The introduction of excessive quantities of air bubbles with the cotton should be guarded against.

While the cotton anchors the lower end of the backing, the upper end is pulled away from the face of the container, thus producing a (curved) wedge-shaped space between the backing and the face of the container. Into this the worm (or other specimen) is introduced and adjusted in the desired position on the background, the thickness of the wedge being adjusted to the size of the worm by packing cotton behind the backing. After the worm has been oriented, more cotton is inserted to fix the specimen securely, the fluid reduced to the level of the upper end of the backing, and the jar closed.

It will be readily seen that this manipulation is much easier with cylindric containers than with necked ones. When the latter *must* be used or several rather small specimens (hookworms) are to be mounted, it is advisable first to coat lightly the (wet) paper backing with hot gelatin outside the container, and quickly and lightly press the worms into the desired positions. After cooling, the paper is adjusted as before on the backing. When the specimens are sufficiently small this background may be made very small, say 2 by 1 cm., appearing on a white background as a black paper window on which the white worms in turn appear.

The foregoing method is especially applicable in mounting all kinds of worms, except the thicker soft ones, such as the Amphistomidae. The latter should be mounted, as are also larval insects and other thick, soft specimens by the following modification: A cylindric jar must be used, from which the backing can be slipped. This done, a cavity is made in the backing which will take the specimen snugly and will be deep enough to receive the whole specimen. If it is pale, a black paper background may be fastened to the depths of the cavity with hot gelatin. The specimen is placed in the cavity, and the backing slid over the face of the container into position and then held there tightly by cotton as before.

If an especially presentable mount is desired, one or two strips of black passe-partout paper may be wrapped on the outside of the container at the top and bottom to hide the water level and the ends of the backing or background.

This method has possible disadvantages. It is possible to pack the cotton so tightly as to flatten the specimen unduly, and it is possible that the paper may lose its deep black color in time. Black celluloid has been substituted for paper, but a sufficiently thin grade is not on the market to permit the nice adaptation to the irregularities of the glass necessary in mounting very small specimens; but it can be used with larger worms like ascarids. The test of time has not as yet been applied to these two materials for color fastness. Attempts have also been made to color the backing by mixing lampblack or coal dust in the plaster while wet, but quantities sufficient to give a deep black impair the cohesion of the plaster so seriously that it spoils the mounting medium. Portland cement is a most unsatisfactory substitute for plaster. It does not give a good black, sets slowly and cannot be easily fashioned.

Special advantages obtain when the method is applied in mounting worms. They are not damaged by immersion in an adhesive or ligating material, and

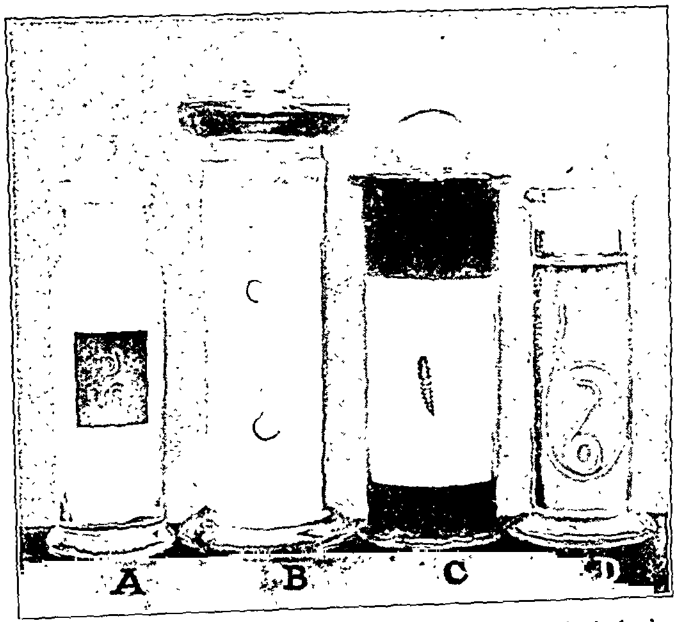

Fig. 2.—Parasitic worms mounted against plaster-of-Paris background: *A*, hookworms shown against a black paper "window," which in turn is supported by a plaster-of-Paris backing. Shows use of necked container. *B*, whipworms mounted against plaster-of-Paris backing. C, insect larva mounted in depression. Passe-partout tape wound around container above and below, to give finished appearance. *D*, filariae mounted against black paper background, in turn supported by plaster backing.

can be removed easily at any time for microscopic examination.

In conclusion, a word may be said in regard to the use of plaster of Paris. This is purchased, "quick setting" and "slow setting"; the former sets in about five minutes, the latter in twenty. Setting may be hastened by adding salt, retarded by adding a little gelatin. In mixing plaster, it should always be sprinkled on the surface of the water, never adding so much that the surface of the mixture becomes dry. Water should never be poured into dry plaster. The plaster should be allowed to settle from five to ten minutes, during which time a layer of water appears on the surface. This is poured off and the mixture *gently* stirred. These precautions are taken to prevent lumpiness and the formation of bubbles, which result from much stirring. Prepared in this way, the plaster is of the proper consistency for pouring, and is free from bubbles.

JUVENILE DEFORMING OSTEOCHONDRITIS OF THE HIP*

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SAN FRANCISCO

My reason for presenting a paper on this subject lies, first, in the newness of knowledge concerning it, only two years having elapsed since Perthes' article before the German Congress of Surgeons; and secondly, in the importance of recognizing the disease, and of saving our little patient from a wearisome course of treatment for tuberculosis of the joint, to which, in its early stages, osteochondritis shows a close resemblance, but in its later stages, a vast difference.

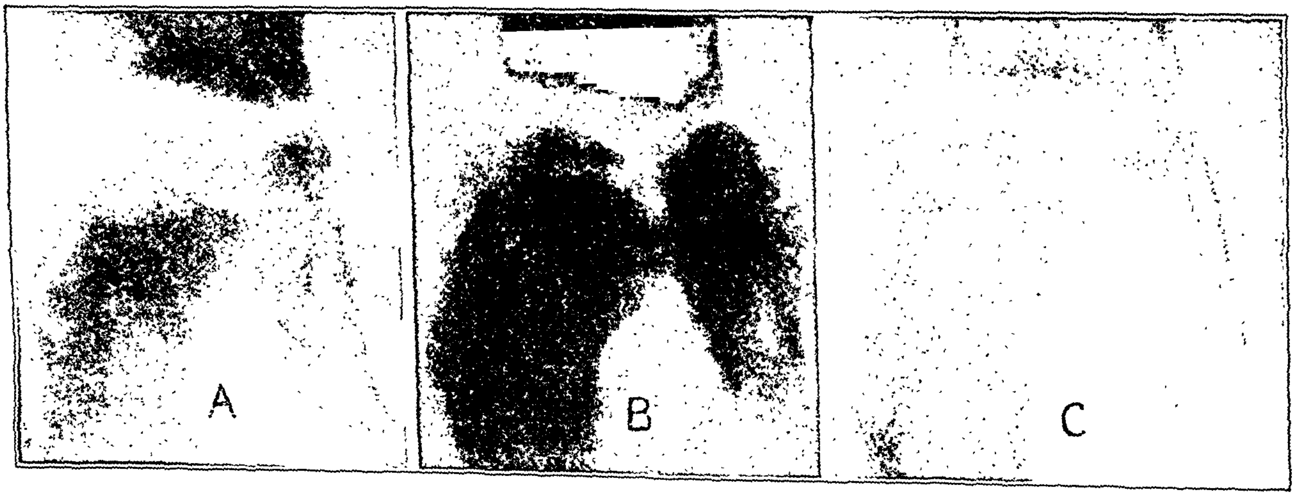

Fig. 1 (Case 1).—*A*, roentgenogram taken at first visit, showing very slight flattening of the epiphysis; *B*, ten months later; *C*, nine months later than *B*, showing fragmentation as well as flattening.

To define briefly, juvenile deforming osteochondritis (the name given by Professor Georg Perthes of Tübingen) is a progressive destruction and crushing, principally of the upper femoral epiphysis, characterized by a slight limp, mild subjective symptoms, a fairly constant limitation of abduction, and a benign course with complete recovery under little or no treatment.

ETIOLOGY

A history of limping by parents is only occasionally elicited, and would hardly seem to have any significance. The disease appears when the child is in good health, and is not especially concerned with any specific trauma, although in two of our three cases, mild injuries were associated with the onset.

Quite constantly boys are affected in the second five years of life. No explanation has been offered for this phenomenon, although one might presume that the strenuous exercise of the male animal at this time of his life might produce a constant strain and tend to a breaking down of the structures in consequence, when no one tissue was at fault.

SYMPTOMS

A slight limp is the obvious symptom. This occurs early and persists till late, becoming more and more intermittent, and is accompanied by slight or no pain. The limp may last from two to four years, says Perthes, and then lessens, in spite of greater destruction of the epiphysis, as seen in successive roentgenograms.

The symptom next in importance is the elimination of abduction, seen constantly, and persisting much as the limp does. It is marked at first, and is due to alterations in shape of the epiphysis and acetabulum, according to Perthes, although he admits that limitation of abduction may be well developed when the flattening of the epiphysis is slight. Under narcosis he could overcome the limitation to a great degree, although not altogether, showing that muscle spasm played an important rôle. This was done in one of our cases with a similar result.

Also rather constantly is reported a limitation of in or out rotation to a slight extent. Other motions are said to be unimpaired, although in two of our cases we found limited hyperextension.

Slight shortening and atrophy are occasional symptoms of lesser note.

Pain is almost a negligible factor, and in these three cases none was elicited by our examinations. There was an occasional complaint of spontaneous pain in the early stages.

PATHOLOGY

According to the studies of Perthes, including an arthrotomy, in which the joint was inspected and specimens removed for microscopy, there is a delay in ossification of the cartilage of the epiphysis, and to a lesser extent also in the juxta-epiphyseal cartilage of the neck and isolated areas in the acetabulum. This forms what he calls "cartilaginous isles," or defects in ossification. He also notes calcareous nodules or dark spots on the ossific nucleus of the epiphysis. As a result we have flattening or crushing of the epiphysis, because cartilage persists in places where bone is needed to bear the increasing weight of the growing child and withstand the traumatisms of a boy's rough play. Its shape also is a factor in this connection, for Quain says, "The epiphyseal cartilage in the young bone is not a flat plate situated at the junction of the head and neck, but an arched lamella, which at the summit of its convexity lies near the center of the articular head."

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* Read before the Section on Orthopedic Surgery at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

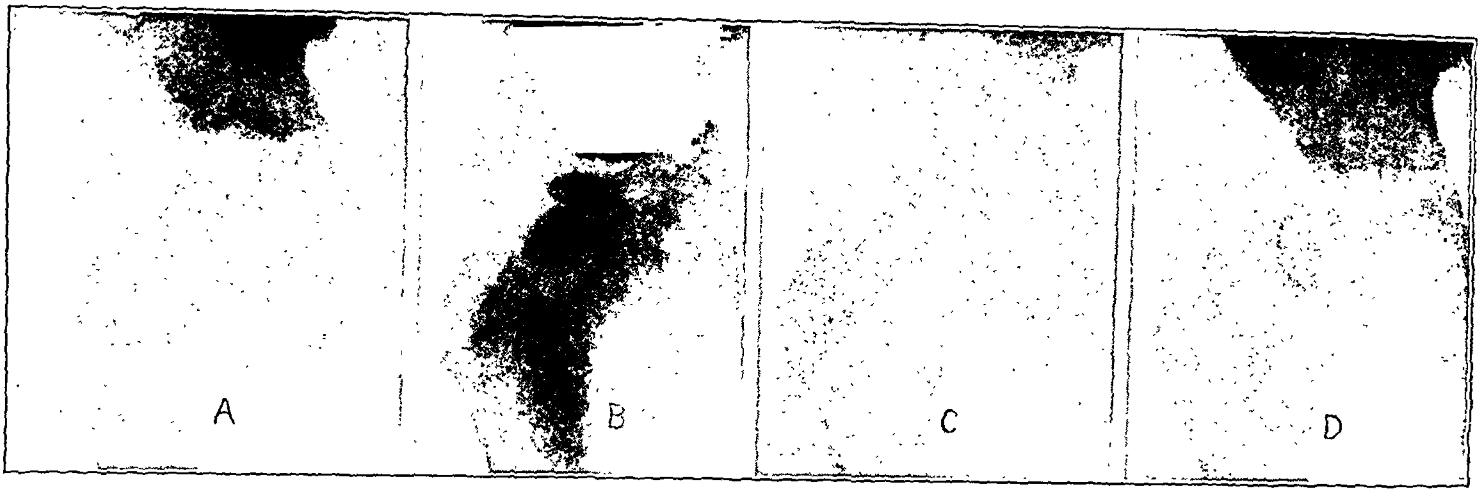

Fig. 2 (Case 2).—*A*, condition at first visit; flattening well marked; *B*, five months later; continuation of process; *C*, six months later; fragmentation appearing; *D*, seven months later; fragmented sections fusing to diaphysis.

Later the flattened epiphysis breaks into two or three pieces, and finally unites to the neck, which has become much shorter and thicker than normal, although still preserving the normal angle.

ROENTGEN-RAY FINDINGS

These are so distinctive that Delitala,[1] in an exhaustive review, asserts that a Roentgen examination alone is sufficient for the diagnosis.

The flattening or crushing of the epiphysis is the salient feature. This is progressive, being slight at first, and increasing till the epiphysis, instead of being a rounded outline, is reduced to a flattened plate or disk, often divided into two or three parts. Later these appear to fuse, and the whole finally unites to the diaphysis. The cartilaginous isles mentioned above as appearing in the juxta-epiphyseal line and in the acetabulum are sometimes seen in good roentgenograms.

DIFFERENTIAL DIAGNOSIS

Here we must consider tuberculosis, juvenile deforming arthritis, polyarticular acute arthritis or rheumatism, coxa vara and osteomyelitis.

To distinguish it from tuberculosis we can place considerable reliance in the von Pirquet test, in the clinical examination showing the principal limitation of motion in abduction, a little in internal rotation and none in other directions, as opposed to tuberculosis, which usually shows some limitation in all directions. The lack of pain or joint spasm is another point, while the roentgenogram, showing none of the general rarefaction of tuberculosis in the early stages, in the later offers conclusive differences in the shape of the epiphysis.

Juvenile deforming arthritis is accompanied usually by joint crepitation, the pain is quite severe, and there is considerable stiffness and marked limp. The von Pirquet test should help, and the roentgenogram sometimes resembles Perthes' disease closely as to the crushing of the epiphysis, but often shows osteophytes or spurs, which osteochrondritis does not. Furthermore, the joint cartilage is intact, a point emphasized by Perthes.

In coxa vara the roentgenogram and the von Pirquet test are our only means of differentiation; but they should be quite sufficient. Clinical examination and history may fail us altogether.

In acute articular arthritis we have acute onset, much pain and disability, limitation of motion in all directions, fever, etc. The roentgenogram would show no change.

Acute osteomyelitis should present no difficulty. In chronic or healed osteomyelitis, reliance should be placed on the history and Roentgen findings.

TREATMENT

Perthes, with the widest experience of any one, concludes that operation is not indicated, that correction of abduction under anesthesia may be a good procedure, and that plaster spicas do no harm beyond inducing some atrophy, but that extension with massage is probably better.

I cannot agree with Delitala, who thinks that weight bearing has nothing to do with the crushing of the epiphysis, and that intimate alteration in the process of ossification is the only factor. Until we know the pathology absolutely and definitely, the child should be protected from weight bearing in the acute stage, but in the later stages allowed to run about regardless of the apparently alarming changes the Roentgen ray might show, as all cases run a benign course and tend to spontaneous recovery.

Perthes reports five cases seen from five to thirteen years after onset. The history and course were typical, although thought at that time to be tuberculosis. The uniform result was a broad flat head on a short thick neck, resembling coxa vara. There was a constant slight limitation of abduction. Otherwise functions and motion were restored. There was no pain or limp.

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[1] Delitala: Am. Jour. Orthop. Surg., 1915, xii, 555.

During the last two years Dr. Sherman and I have observed three examples of this disease, with histories as follows:

Case 1.—B. F., boy, aged 3½ years, seen first by us in *July, 1913*, came from a family in which the parents and older children had never limped; his infancy had been normal; he had had pertussis at the age of 1½ years. He complained of *pain* in the left knee at the time of a fall six weeks before first seen; he limped a little and got better. Again five days before the first visit he twisted the left foot and leg; he heard a snap, and then had pain and difficulty in walking. At the first visit he walked with a decided limp, but on the table had free joint motion, except that the heel would not go so high into the opposite scarpa as normal. Two days later, when reexamined, the limp had disappeared. The von Pirquet was negative. The boy was not seen for ten months, during which time he had intermittent soreness and would limp for a few days. He then showed no limitation of motion or limp, but the roentgenographic changes were marked. Wassermann negative, normal thymus, genitalia, hemoglobin 75 per cent. In April of this year he was seen again. In the eleven months' interval he has had five or six limping spells, each lasting a day or two, *accompanied* by slight hip pain; the attacks lessened *in* severity, the last one occurring in September, 1914.

The parents say he has a tendency to stumble because he will not lift the foot so high as the right one, and is a little clumsy in running. Examination shows 40 degrees' abduction, as against 45 in right. Five cm. atrophy midthigh; hyperextension normal; no shortening.

No treatment was given.

Case 2.—L. W., boy, aged 6½, was first seen in December, 1913. The parents had never limped; the child was healthy as a baby; he had had pertussis and roseola, both lightly; he commenced to limp six months before the first visit, and complained of pain in the left knee, not enough to stop play. When seen in the office, he had no limp and no limitation of motion. Tonsils were removed, although no Rosenow bacilli found. A month later he had *no limp*, but *only* 14 degrees abduction were permitted, and slight limitation of hyperextension.

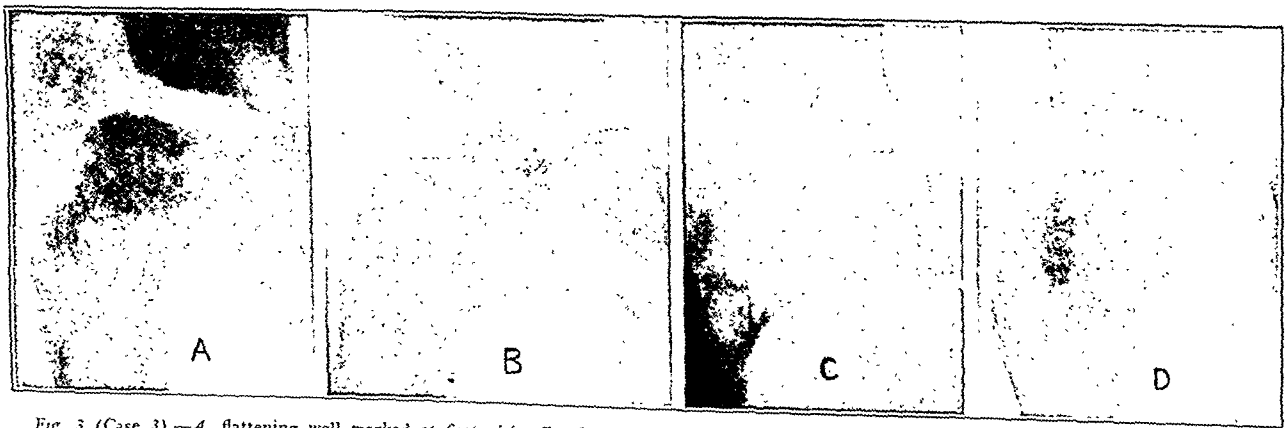

Fig. 3 (Case 3).—*A*, flattening well marked at first visit; *B*, after five months; continuation of process; *C*, five months later; fragmentation appearing; *D*, three months later; continuation of process.

Von Pirquet and 2 *mg.* Koch's Old Tuberculin were both negative. Wassermann was also negative.

The child was put in spica and on crutches to protect the joint. This was continued four months, when the abstract of Söderlund's article[2] induced us to remove the spica and consider the condition as therein described.

The course of the disease since has been quite typical. The parents have endeavored to make him use crutches, but he is as apt as not to discard *them when* at play, the joint being absolutely without pain.

Case 3.—B. C., boy, aged 7, seen first in May, 1914, with no history of limping, had whooping cough and measles lightly in infancy, but no other illnesses. Limping commenced after a fall from a tree, and the boy complained of pain in the groin. He limped a little, steadily, for three months, and then was placed under our care. We found only 15 degrees' abduction permitted, with limited rotation and hyperextension. Roentgenoscopy revealed marked flattening of the epiphysis. The von Pirquet and Wassermann tests were negative. In three weeks, the adduction and other joint restrictions being on the increase, an anesthetic was given, the adduction overcome, and a plaster-of-Paris splint applied.

At the end of seven months, or last March, there being abduction of 35 degrees, with free joint motion, splint treatment was discontinued, in spite of the increased flattening of the epiphysis, as shown in roentgenograms. Since March he has been kept on lift and crutches, although without them he has a slight limp, because of restricted motion; he has a little fulness over the neck of the femur; 25 degrees' abduction are permitted, and two-thirds normal rotation.

He has had no pain since the fall from a tree when the symptoms began.

These three histories and accompanying roentgenograms are quite typical of the syndrome brought into prominence by Perthes two years ago. Keeping it carefully in mind will save a small percentage (Delitala saw six in 1,500 cases of coxitis) from the dreaded diagnosis of tuberculosis. To us also will be given the satisfaction of making a definite advance in the scientific accuracy of our diagnoses.

One should also consider that other joints may be similarly affected. Ridlon,[3] two years ago, before this section reported two cases of osteochondritis dissecans, *producing* defects *in the* cartilage of the knee, resulting in small free bodies in the joint. Other rare and little understood joint affections may in time be grouped under a common pathology, having as the salient feature an inflammatory defect, a breaking down or delayed ossification (as in Perthes' disease) of the cartilage.

350 Post Street.

ABSTRACT OF DISCUSSION

Dr. H. M. Sherman, San Francisco: The cases were of interest to us because we had read of the condition before we found it in one of the *children*. The diagnosis must be made primarily, because an inaccurate diagnosis might cause one to put the child into a splint for a long while when it might not be really necessary. The local diagnosis, apart from the general one, can be made on two bases: first, on the clinical examination, in which one does *not* find the typical symptom of a hip joint tuberculosis, and second, by means of a roentgenogram. These two things, with a negative von Pirquet and a negative Wassermann, should serve to establish the character of the condition. We intended to treat all of these children without any splints at all after we had made our first diagnosis, but one of them evidently was suffering a certain amount of irritation in the neighborhood of the joint, which caused a reaction that impeded motion. We thought that needed protection, so that it was put into a spica which held the hip still for a certain length of time until we could safely take it off. Since then the patient has been without splints. We have not had opportunity to watch the patients far enough into life to know what the ultimate result will be.

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[2] Söderlund, G.: Nontuberculous Hip Joint Disease in the Young, Upsala Läkaref. Förh., *1914, xix, Nos. 2-3*; abstr., The Journal A. M. A., May 2, 1914, p. 1444.

[3] Ridlon, John: Osteochondritis Dissecans, The Journal A. M. A., Nov. 15, 1913, p. 1777.

Dr. Haas' paper, it seems to me, comes in here with great usefulness in the experiments which he made on the results of interfering with the circulation in a bone. I refer to the case in which he showed us two pictures in which there had been interference with the growth of a metatarsal bone following an interference with the circulation outside the bone. It would look as if that might be the case in these children with osteochondritis at the hip. If there has been an injury, that might be credited with having interfered with the circulation sufficiently to change development processes. If there has been no history of an injury—and of course one cannot always get a history of all the falls that a child has, because a child cannot tell—if there has been no history, it would not be unreasonable to suppose that every child falls more or less, and that an injury had occurred, in spite of there being no record of it. Experimental work would be difficult, except on animals in which the anatomy was so well worked out that you could tell just where each artery was going; but experimental work should promise an answer to questions of etiology.

A CASE OF STRAMONIUM POISONING

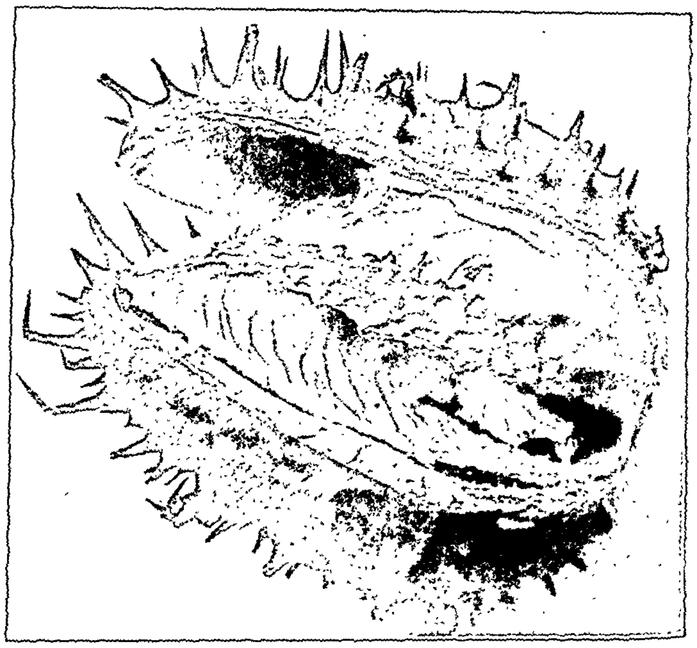
William D. McNally, A.B., Chicago
Chemist, Cook County Coroner's Laboratory

M. R., a strong healthy boy, aged 7 years, died suddenly Nov. 29, 1914. Part of the stomach contents, consisting of 130.5 gm. of poorly masticated food, mostly vegetables, was submitted to me for examination. About twenty small kidney-shaped seeds about 2 mm. long and 2.5 mm. wide, of a brown color, were found unbroken in the food. From the stomach contents which contained broken seeds, 2.2 mg. of an alkaloid were extracted which gave a purple violet with Vitali's test. A drop of a solution containing about $\frac{1}{240}$ grain in 1 c.c., was dropped into the right eye of a cat and compared in a half hour with the left eye, when a marked dilatation was noted. An amorphous precipitate was obtained with hydrobromic acid saturated with bromin. The precipitate became crystalline after standing, was insoluble in acetic acid and only sparingly soluble in hydrochloric acid. From the foregoing tests and the physical examination of the seeds, I concluded that the boy had eaten the seeds of the *Datura stramonium*, containing atropin and hyoscyamin.

At the home of the boy I obtained a "thorn apple," a four-valved, four-celled capsule thickly covered with sharp spines containing numerous seeds of the same appearance as those found in the stomach contents. A chemical and physical examination proved the seeds to be those of the *Datura stramonium* or Jamestown weed, sometimes called "jimson weed." The "thorn apples" were obtained in a neighboring yard, where the plant was cultivated for its white flowers. The "jimson weed" is an annual plant, of a very vigorous growth, found in vacant lots and in the country. Since it is so common and easy of access to children, it is singular that more cases of poisoning are not reported.

The seeds were eaten about 5 o'clock in the evening. The boy ate his supper at 6 o'clock, retiring at 8 o'clock feeling as well as usual. About 12:15 he called to his mother, complaining of being alternately cold and feverish. Half an hour later he was delirious, tossed about in his bed, wanted to go barefoot, and pulled at his nightgown. After about one hour of restlessness the boy went to sleep breathing very heavily. The family endeavored to obtain the services of a physician without avail. At 6 o'clock in the morning the mother found the boy resting easy. Fifteen minutes later she went in to awaken another child and found the boy dead, with his face sunk into the pillow, fourteen hours after eating the seeds. The boy did not have convulsions, vomiting or diarrhea.

At the necropsy made twenty-four hours after death, by Dr. H. W. Burmeister, there was no evidence of rash, and no skin petechiae were present. It was particularly noted that the pupils were not dilated to any marked degree. The lungs were slightly distended, and there were a few scattered subpleural petechiae over both lung surfaces. There was a hypostatic congestion in their posterior portions. Scattered over the epicardium of all portions of the heart were numerous (several hundred) small petechiae. These were for the most part discrete, and none measured over 0.1 cm. in their greatest dimension. The liver was negative except for an acute slight passive hyperemia and a parenchymatous degeneration. The jejunum and the ileum contained a thick semifluid yellowish material in considerable amount, and scattered throughout the course of the entire small intestine were about 100 seeds identified as above as coming from the *Datura stramonium*. Otherwise the organs were grossly negative.



Thorn apple of *Datura stramonium*.

The number of necropsies after death from atropic poisoning is small, and the lesions observed, as in this case, are not characteristic.

The literature does not give sufficient data to serve as a basis for even an approximate estimate of the lethal dose of stramonium. An Indian laborer[1] died in seven and one-half hours; the stomach contents contained eighty-nine seeds. A child of 2½ years died after having swallowed about 16 grains of seeds.[2] A girl,[3] aged 8 years, swallowed 237 seeds, and recovered with treatment. In the case reported above, the boy died from eating not more than 180 seeds. According to statistics of Falck, quoted by Kobert,[4] death occurred in 11.6 per cent. of the cases collected of atropin and hyoscyamin poisoning.

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1. Allan: Lancet, London, May, 1847.
2. Duffin: London Med. Gaz., 1834, xv, 194.
3. Friedman: Jahrb. f. Kinderh., 1891, xxviii, 354.
4. Kobert: Lehrbuch der Intoxikationen, 1906, p. 1043.

Special Article

THE AUTOLYSIN TREATMENT FOR CANCER

RICHARD WEIL, M.D.
NEW YORK

I have received so many requests for information concerning the new treatment for cancer described as "autolysin" that I have deemed it advisable to make a public statement on the subject. The fact that I had the opportunity of personally witnessing the application of this compound in a long series of cases has placed me in a position to express an independent opinion as to its merits. At the time when Dr. Beebe was still connected with the General Memorial Hospital,[1] New York City, a preparation was brought to the hospital authorities by Dr. A. Horowitz, with a request that its therapeutic effectiveness in cancer be made the subject of study. This mixture, which has since been described as autolysin, had been used in a number of cancer cases, and was stated to have proved of value. It had already achieved a local reputation and some degree of newspaper notoriety in the treatment of cancer.

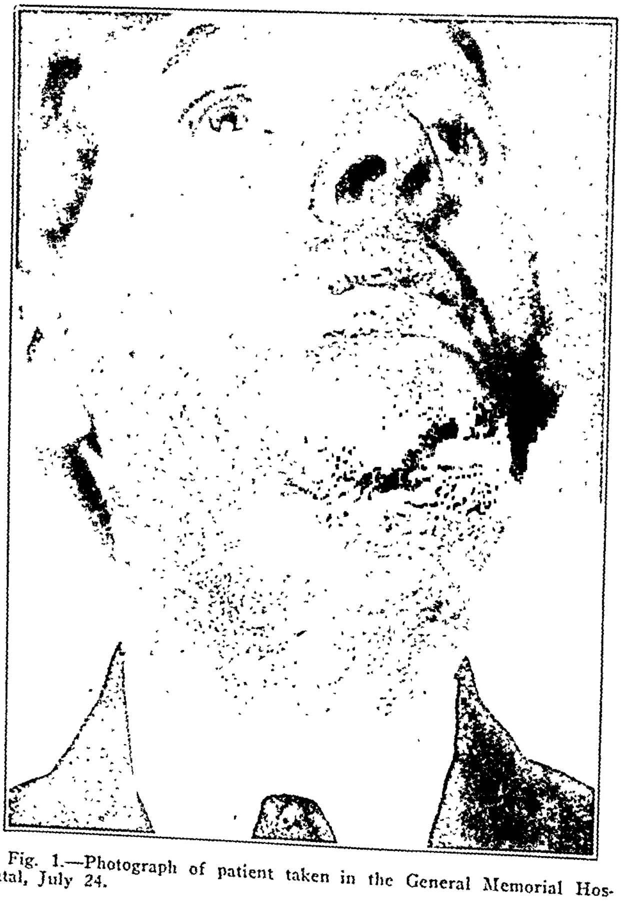

Fig. 1.—Photograph of patient taken in the General Memorial Hospital, July 24.

In accordance with a well-defined policy of the Memorial Hospital which approves of the further investigation of therapeutic measures of whatever description, provided they offer the hope of assistance in cancer, Dr. Horowitz' mixture was accepted for study. Dr. Beebe volunteered to carry on this study. The rules of the medical board of the hospital prescribe that in such cases the exact composition and formula of the preparation under investigation be disclosed to at least one member of the board, and Dr. Beebe informed the board that this regulation had been duly complied with, and that he was in possession of complete knowledge on that subject. Consequently, Dr. Beebe was given the privilege of applying the treatment in a considerable number of cases, and the fact that I had general supervision of the clinical activities of the institution imposed on me the duty of watching the progress of these cases.

The cases entrusted to Dr. Beebe comprised a wide and diverse group, including cancer and sarcoma of the various tissues and organs of the body. Dr. Beebe has stated, in his first paper, that the cases treated in the Memorial Hospital "represent the most hopelessly incurable and inoperable group of patients." That they were inoperable is indeed true. An ethical regard for the welfare of patients forbids the use of new and experimental remedies in cases which offer a hope of cure by the older and well-tried methods of medicine and surgery. Therefore, only such cases were submitted to his treatment as could not be helped materially by the other means at our disposal, such as surgery, radium or the Roentgen ray. In not a few instances, though not all, the patients were given the benefit of radium or Roentgen-ray treatment, while autolysin in addition was administered. That all of the patients were moribund, or even in very serious physical condition, is, however, not the case. There is a large group of cancer patients, as every physician knows, who are apparently in excellent, or even in perfect health, but in whom the condition of the disease entirely precludes the possibility of effective treatment. Some of the cases put in Dr. Beebe's hands at the Memorial Hospital were in good physical condition, and here the treatment, if of real value, should certainly have demonstrated its virtue.

Since Jan. 1, 1915, twenty-three cases have been treated in the wards of the hospital by Dr. Beebe with autolysin. Of these twenty-three cases, fourteen patients died in the hospital, and eight were discharged unimproved. Only one, to the best of our knowledge, is at the present time in a condition which could be described as an improvement on that presented at the time of admission to the hospital. To this case, which seems to be identical with Case 3 of Beebe's paper[2] of October 2, I shall come in a moment for more detailed discussion. Although the eventual outcome of the cases was not affected by Beebe's treatment, the clinical course was somewhat altered thereby. In those cases in which the mixture was injected directly into the tumors, there resulted necrosis, suppuration, and sloughing of portions of the tumor masses. This effect is quite characteristic of the action of a large number of irritant or destructive substances, whether of mineral or vegetable origin, on tumor tissue. It affects the size of the mass, and may impress the mind of the patient and his friends, but does not in the least degree impede the steady and relentless progress of the malignant growth. Indeed, there is a spontaneous tendency for malignant growths to break down and die at the center, while simultaneously the living cells at the periphery successfully ture for use in the treatment of cancer cases. An interesting document in this connection is furnished by a letter to a physician in Seattle, dated July 29, signed by S. P. Beebe,[5] and recently published by *Northwest Medicine*. In that letter Dr. Beebe declares to his correspondent that the ordinary physician is not competent to use the drug, and lays down the financial terms on which his firm is ready to examine the case — the sum of $250 for "examination, consultation, etc." Of course, writes Beebe, if the doctor will come to New York from Seattle they will be glad to show him how to administer autolysin. After this, the doctor will be able to administer it himself.

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[1] To avoid further misunderstanding, it should be stated that Dr. Beebe's connection with the Cornell University Medical School and with the General Memorial Hospital terminated some time ago.

[2] Beebe, S. P.: New York Med. Jour., Oct. 2, 1915.

I wish to add a word in conclusion. The majority of those who will read this article have had practically no means of judging of this treatment through their own observation. Cancer patients are peculiarly gullible, and will snatch at any straw in the hopeless struggle against their disease. Such unfortunates gladly undertake long and painful journeys at the cost of great suffering, and surrender their last remaining dollar, in the hope of gaining relief. Surely they deserve to know all that we can tell them of the treatment which is so enticingly portrayed. My own personal belief, founded on long observation, is that autolysin is useless; that it adds nothing of value to the methods now generally accepted; and that it often aggravates the sufferings and accelerates the death of the patient.

970 Park Avenue.

Therapeutics

PNEUMONIA

(Concluded from page 1553)

SERUM AND VACCINE TREATMENT

The value, in all cases, of serum or vaccine treatment of pneumonia is still in doubt. Rosenow[6] found the opsonic content of the serum of the blood in lobar pneumonia to be below normal during the early part of the disease and to become, in favorable cases, above normal as the symptoms began to subside. When there is a severe infection and the patient is overwhelmed by the disease the antibodies in the serum were found to remain below normal. Rosenow developed an autolyzed pneumococcic vaccine which, when injected into a patient with pneumonia, he found, would hasten the production of the antibodies needed to fight the infection, and therefore would hasten recovery. Later Rosenow and Hektoen[7] reported that the mortality from pneumonia in their cases had been reduced by injecting this antigen or vaccine.

Vaccination as a prophylactic and to immunize against pneumonia is purely in the experimental stage.

MEDICINAL TREATMENT

We are past the stage when any dogmatic advice can be given in regard to the use of drugs in pneumonia. The physician who has charge of a pneumonia patient must decide whether a drug is needed to combat a condition or symptom and which drug is the best for the object aimed at. The following are suggestions of drugs that have positive value for certain conditions and brief descriptions of the pharmacolige action expected of them:

Morphin or Codein.—If the pain is acute in the beginning of pneumonia, one of these sedatives should be given. Acute pain is depressant and should not be allowed. Strapping of the chest is inadvisable in pneumonia. An ice bag over the painful region of the chest does not abort pneumonia and is generally not desirable, and on account of the generally high fever at this time, hot-water bags are not advisable.

A cough that is frequent and unproductive, as it may be in the first stage of pneumonia, will be quieted and the pain alleviated by codein sulphate in doses of 0.01 gm. every two, three or four hours as is necessary. If later there is great insomnia, with a very weak circulation, the safest hypnotic is morphin in a dose not sufficient to slow the respiration greatly or to prevent the needed and necessary expectoration. If there is meningeal irritation or an actual meningitis, morphin is generally contraindicated, as it will cause more delirium, unless the dose is undesirably large.

Acetanilid and Antipyrin.—Acetanilid, 0.10 gm. every three hours for four or five doses, or antipyrin, 0.50 gm. every four hours for two or three doses, may be of advantage in lowering the high temperature in the first stage of this disease. These drugs also will lower the blood-pressure and quiet the heart. Such an action may be needed in the very acute first stage of pneumonia, provided that the heart is normal. At this stage, the lowering of the blood-pressure produced by these drugs is often beneficial. Later in the disease, even if there is high temperature, such coal-tar products are not indicated and should not be given.

Ammonium Chlorid.—If the expectoration is very adhesive and cohesive, scanty in amount and hard to raise, ammonium chlorid acts satisfactorily and is indicated. The dose should be 0.25 gm. every two hours, given in a sour mixture, or in lemonade; and if there is much pain or if there is ineffective, frequent cough it may be combined with codein sulphate. Ammonium carbonate, with its irritant, nauseating action, has no tangible cardiac stimulant action; therefore it should not be used.

Sodium Iodid.—This drug in small doses, as 0.20 gm. three times a day, will promote an increased mucous secretion, render the cough easier, and may hasten a delayed resolution of the lungs. Also, the stimulant effect of the iodin may increase the inhibitory activity of the thyroid gland, and it is now known that the thyroid gland is always injured and soon becomes more or less insufficient in acute infections. A normal thyroid secretion is stimulating and more or less antitoxic.

Digitalis.—Digitalis is another drug that has sometimes been lauded, even in the first stages of pneumonia. If the blood-pressure is low and the heart is primarily weak, and there is a very bloody, prune-juice expectoration showing a poor activity of the right ventricle, digitalis may be of value and sometimes does a great deal of good. On the other hand, with the more sthenic type of pneumonia it seems to increase the lung congestion and may do harm. In the heart failure of pneumonia it does not seem to raise the blood-pressure. After the disease has been in progress a week or more there is more or less of a myocarditis, perhaps a very little, perhaps considerable; at all events, digitalis to increase muscular activity of the heart at this stage is generally inadvisable.

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[5] Beebe, S. P.: Northwest Med., September, 1915.

[6] Rosenow, E. C.: The Journal A. M. A., Sept. 7, 1912, p. 795.

[7] Rosenow, E. C., and Hektoen, L.: The Journal A. M. A., Dec. 20, 1913, p. 2203.

Strophanthin. — This drug procured in sterile ampules and injected directly into one of the veins in the elbow, provided digitalis has not been recently administered, is often efficient in tiding a patient over a shocked condition. It should rarely be repeated.

Strychnin.—This is a drug that has been very much overused. To begin strychnin immediately in acute disease is a serious mistake. To give it in large doses very frequently is an error. It excites the nervous system, renders the patient irritable, may cause muscle twitching, and may so irritate the heart as to prevent normal diastolic rest and normal diastolic relaxation. In acute disease, it has been shown not to raise the blood-pressure in serious conditions. In spite of these facts, clinically strychnin often does very good work and even seems to tide our patients over critical periods. In a sluggish, inefficiently contracting heart, when digitalis is contraindicated, strychnin is many times of benefit in making the heart more normal. If a patient is stupid, apathetic and indifferent to his condition, strychnin lights up the nervous system desirably. The rule for strychnin should be, when indicated as shown by this discussion, to give to an adult not more than $\frac{1}{30}$ of a grain, hypodermically, if deemed advisable, once in six hours, and such a dosage should not be long continued. As soon as there is improvement, it should be given by the mouth instead of hypodermically.

Camphor.—Laboratory findings and some hospital reports have not shown that camphor is of value in heart failure. On the other hand, clinical experience at the bedside not infrequently shows that hypodermic or intramuscular injections of a sterile preparation of camphor and oil improves the pulse as to its regularity and volume, causes the surface of the body to be warmer, and many times relieves a cardiac dyspnea by thus equalizing the circulation. At the same time it is a mild nervous and cerebral stimulant, which is often desirable, and it never irritates or causes any heart pangs as some of the so-called cardiac drugs can occasionally do. When there is cardiac dyspnea, when the pulse is small and especially when it is slow and weak and the surface of the body is cold, and when there is cold perspiration, that is, a partial collapse condition, camphor given hypodermically every three or four hours until there is improvement will many times be found of benefit.

Pituitary Fluid.—This represents one of the activities of the posterior lobe of the pituitary body. It has more or less superseded epinephrin in acute conditions, as pituitary raises the blood-pressure a little longer, is a little less sudden in its action, seems to stimulate the heart considerably, and stimulates and increases the activity of the kidneys. The contents of an aseptic ampule should be given hypodermically and perhaps repeated two or three times at three or four hour intervals.

Caffein.—The administration of this drug as coffee or tea has already been discussed under diet. Perhaps no drug, except epinephrin, the action of which is very fleeting, so frequently raises the blood-pressure in serious conditions as does caffein. In emergencies it may be administered hypodermically, or it may be given by the mouth several times in twenty-four hours. It should not be forgotten that it is a cerebral stimulant and not a sleep producer. Its action on the heart is almost always for good, except in some few patients who show an idiosyncrasy to it, the heart becoming irritable from any form of caffein.

Ergot.—This drug, when given in aseptic preparation intramuscularly, certainly raises the blood-pressure, quiets the central nervous system and gives a better vasomotor tone, and may relieve hypostatic congestion of the uninvolved lung, which is one of the dangers of a failing heart in pneumonia. If the blood-pressure is high, this drug should not be given.

Nitroglycerin.—When pneumonia occurs in a full-blooded, sturdy man, especially if he is of the age when his blood-pressure is a little high, small doses, as $\frac{1}{200}$ to $\frac{1}{100}$ grain, every four to six hours, tends to dilate the peripheral vessels and relieve the internal congestion. It also slows and quiets the circulation. By bringing more blood to the surface of the body, it also tends to promote loss of heat and a reduction of temperature. It will never weaken a heart as long as the blood-pressure is high; it should not be used if the blood-pressure is low.

Alcohol.—This drug has lately come into great disfavor. It was, of course, inexcusable to give it in large amounts in pneumonia. On the other hand, as a drug, it still has certain physiologic activities which may in certain cases be of value. In the first place, alcohol will inhibit more or less the acidemia which might otherwise result from a patient's inability to take enough nourishment or enough starch. It then becomes a food, given in such doses as not to cause flushing, throbbing of the head, or cerebral irritation. Also, every clinician has seen a rapid heart become slower, more regular, and the pulse become of more equalized volume under the proper use of alcohol in certain selected cases of pneumonia. In such patients small doses of alcohol may be of value. It will be seen from the discussion of nitroglycerin, however, that many times this drug will act as well, as far as the circulation is concerned, but of course nitroglycerin is not a food. The alcohol selected should generally be a good whisky or a gin. This is not to urge the administration of any form of alcohol, but is to show that alcohol is a drug with physiologic activities and may be used in certain conditions with as much discrimination as is used in giving any other drug.

Hypnotics.—It is hardly necessary to name the different hypnotics. As above stated, in very weak conditions the only safe hypnotic is morphin. In delirium and in insomnia it may be well to use some other hypnotic than morphin. Almost any one of them causes some subsequent cardiac depression. The best hypnotic is perhaps chloral, but there is a great prejudice against its use as it is supposed to be a very great cardiac depressant. There is some doubt about this. Probably an effective dose of chloral is no more depressant to the heart than is an effective dose of any other hypnotic. A few doses of sodium bromid may be advisable. If a synthetic drug is to be selected, sodium diethyl-barbiturate (veronal-sodium, medinal) is perhaps less depressant, in effective dose, than any other.

As stated at the outset, a restful, quiet room, a sensible, efficient nurse, a sufficient amount of fresh air, and a suitable diet and proper care of the bowels will prevent high temperature, heart failure, low blood-pressure, insomnia, tympanites and toxemia in very many cases, and prevention is far better than the treatment of these serious conditions.

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SATURDAY, NOVEMBER 6, 1915

STATISTICS OF INFANTS AT BIRTH

The variations in the weight of the human infant at birth have been the subject of considerable speculation and statistical study. It has been asserted that the weight at birth is greater the nearer the mother's age is to thirty-five years, the greater the weight of the mother, the greater the number of previous pregnancies, and the earlier the appearance of the first menstruation. Race and climate have also been assumed to be of influence.[1] Minot[2] believed that all of these influences work principally through prolonging or abbreviating the period of gestation, and that the variations at birth depend partly on the duration of gestation and partly on individual differences of the rate of growth in the uterus.

A recent careful statistical analysis of more than 500 confinements, yielding approximately equal numbers of male and female infants, showed that the length of the period of gestation is very much less variable in normal females than the weight of the infant which is delivered.[3] According to Robertson's calculations, the mean length of periods of gestation yielding males is 282.5 days, with a probable error of ± 0.55 days and a variability of 4.47 per cent. The mean length of periods of gestation yielding females is 284.5 days with a probable error of ± 0.57 days and a variability of 4.85 per cent. The deviation of normal periods of gestation from the mean are fortuitous in origin. The chances are a million to one against a male child being delivered at the termination of an otherwise normal pregnancy before 224 days or of a female child before 222 days after the onset of the last menstruation. Hence all seven-month children (210 days) may be regarded as the fruit of pathologic pregnancies. It is inferred that the length of the period of gestation in normal females is primarily determined, not by the fetal development, but by a maternal cycle of events which is to a considerable extent independent of the stage of development attained by the fetus.

Data now available for a number of different countries of the world bring out the striking similarities in the average weights at birth of infants from the same groups of people, and an unexpected difference between the averages for diverse peoples. For infants born in Great Britain the average weight measurements at birth have long been quoted as 113.6 ounces for males and 110.4 ounces for females. Newer figures by Karl Pearson[4] give the mean weight at birth of 1,000 male infants born in London (at the Lambeth Lying-in Hospital) as 116.8 ounces, while that of 1,000 female infants is 113.2 ounces. For Birmingham corresponding figures of 114.9 and 113.5 ounces respectively have been reported.[5]

T. B. Robertson calls attention to the excellent agreement with one another of the various estimates of the weight at birth of British infants born in the British Isles. Records which he has just published[5] in relation to the Queen's Home, a maternity hospital in Adelaide, South Australia, in which the admitted patients belong to the same laboring and unskilled artisan classes as do those furnishing the data for the British Isles, give unexpectedly different figures. Robertson found that the average weight at birth of 247 male infants born in South Australia, the fruit of normal confinements, is 127.3 ounces, while that of 264 female infants is 121.2 ounces. He thus emphasizes the striking fact that South Australian infants weigh from 8 to 10 ounces more at birth than infants born in Great Britain. They are also from 5 to 6 ounces heavier at birth than infants of English descent born in the Eastern United States.

Robertson points out that the results observed cannot be due to any racial selection among the immigrants from the British Isles who have given rise to the population of Australia: In the first place, there is no evidence that such selection has occurred to any greater extent than it has, for example, in London, of which city the very great increase in population during the past century has been contributed by all parts of the British Isles, and, in the second place, there is no evidence of the existence of a race in the British Isles which is in any noteworthy degree superior in physical dimensions to the average inhabitant of England. It has been said that the evolution of the Australian people may be regarded as that of the British people under changed climatic, social, and economic conditions. To these factors, therefore, Robertson is impelled to ascribe the superior weight of the Australian infant at birth. He specifically points out that the climate is much less rigorous than that of England, food is cheaper in proportion to income, or, when of a like price, better in quality, and the social and economic conditions are so far an improvement on those prevailing in England that whereas women of the laboring and unskilled artisan classes in England have frequently to supplement the family income by their own exertions, those of the corresponding classes in Australia as a rule confine their physical activities to the management of their households and families, a condition of affairs which, quite apart from the possible direct effects of physical labor on the mother, must have important indirect effects in ameliorating the nutritional and hygienic conditions within the household. Attention is called to the fact that these conditions may be conceived to have an appreciable prenatal effect on the growth of the child, since Pinard has shown that the rest and improved nutrition of hospital life cause a notable increase in the average weight of infants delivered by working mothers who spend a part or a whole of the period of pregnancy in lying-in hospital, and Prochownik has shown that e size of a child at birth may be reduced by restrict- g the diet of the mother.

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[1] Cf. Lee, F. S.: Reproduction, American Textbook of Physiology, 1896, p. 925.

[2] Minot, C. S.: Human Embryology, 1892.

[3] Robertson, T. B.: On the Fortuitous Origin of Departures from the Normal Period of Gestation in Man, Am. Jour. Obst., 1915, lxxi, No. 6.

[4] Pearson, K.: Data for the Problem of Evolution in Man, Proc. Royal Soc. London, 1900, lxvi, 23.

[5] See Robertson, T. B.: A Comparison of the Weights at Birth of British Infants Born in the British Isles, the United States, and Australia, Univ. California Pub. Physiol., 1915, iv, 207.

As regards weight at birth, the Anglo-American fant is intermediate between the Australian infant nd the infant born in the British Isles. In a way this orresponds with the character of the social and eco- omic conditions prevailing in the three countries con- erned. The interesting suggestion is made that the ean weight of infants of the same race at birth is a ery sensitive criterion of the social and economic nvironment in which they are born. If this proves o be true, a new relation between the economic and ygienic problems of a nation will be brought into rominence.

THE "AUTOLYSIN" TREATMENT FOR CANCER

Modern science calls for proof — proof as indu- itable and unqualified as the case will permit. Scien- ific men accept new theories and new alleged facts only when they are supported by reliable evidence. Especially is this true in the realm of scientific medicine. Unlike the exact sciences, there are in medicine so many elements which may vitiate definite conclusions that the careful physician is slow to accept claims made for new therapeutic agents. And rightly so; for human health and life are too valuable to be made the sport of untried theories and unsupported claims. In a world largely dominated by commercial instincts, this unwillingness on the part of the physician to accept, at its face value, every claim made for a new therapeutic product has long been a source of irritation to the exploiter. It is not surprising, then, that the refinements of twentieth century advertising have been brought to bear in overcoming the physician's caution — a caution exercised wholly in the interests of his patients; hence the spectacle, during recent years, of the exploitation of additions to materia medica — some of which may have had an appearance of at least quasiscientific value — brought to the notice of the public, rather than to the medical profession, by every art known to the modern advertiser. At the same time a semblance of scientific standing has been given the products by publishing in such medical journals as would accept them articles describing these products. The theory, apparently, on which such methods are based is that by creating a sufficient demand on the part of the public for these products, the physician will be dragooned into using preparations which his sober judgment tells him have not passed through the refining fires of scientific investigation. It is only necessary to call to mind the Friedmann "consumption cure" campaign, and the resurrection of the discredited scopolamin-morphin anesthesia under the popular name of "Twilight Sleep," to realize the potentialities for harm that this method of exploitation carries.

The most recent example of this pernicious method of bringing into the public eye new therapeutic agents is exemplified in what has been called the "autolysin" treatment for cancer. Early in the publicity movement for this treatment THE JOURNAL[1] urged caution, calling attention to the secrecy and the unscientific character of the formula. "Autolysin" was brought into the limelight of publicity chiefly through the medium of sensational newspaper and magazine articles. This was accomplished before the preparation had been so tried out as to establish, without question, its value or lack of value. Its exploitation makes the thoughtful wonder whether it belongs in the realm of scientific discovery or in that of crude commercialism. As is always to be found in such cases, the failures are minimized and the successes are heralded. Its use for all practical purposes has been wholly in the hands of its friends and promoters. Naturally, reports emanating from such sources must be looked on as *ex parte* statements, rather than as scientific records. The time has evidently come, as it will come in all such cases, when we may expect to hear the other side. A little while ago[2] THE JOURNAL published a disclaimer from a Detroit physician whose name had been connected with one of the magazine articles boosting the treatment. Elsewhere in this issue is further evidence on the other side.[3] Also, THE JOURNAL submits some correspondence[4] relative to the exploitation of this new product, dealing with the commercial aspect of the case.

Some of the best brains in the world are working on the problem of the prevention and cure of cancer; so far the solution is not in sight. When it comes it will come as a gift of medical science to humanity. It will not come in the form of secret and mysterious combinations controlled by a few individuals to be doled out to those who are able, or willing, to pay the toll demanded. It will be determined after a series of experiments carefully conducted under scientific control in various institutions and under the observation of disinterested, scientific workers. Only under such conditions will it be possible to declare, with any degree of scientific accuracy, that a successful treatment has been established.

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[1] The Horowitz-Beebe Treatment for Cancer, editorial, THE JOURNAL A. M. A., July 24, 1915, p. 336.

[2] Sept. 18, 1915.

[3] Weil, Richard: The Autolysin Treatment for Cancer, THE JOURNAL A. M. A., this issue, p. 1641.

[4] Propaganda Department, p. 1662.

Whether the "autolysin" mixture may possess some elements of value in combating the scourge of cancer must be left to the future to decide. Even should it be found of use this would not alter the fact that the methods of exploitation have been unworthy of scientific men, and in their effects on the public, the very refinement of cruelty.

CRAIGIASIS

The classification of amebas was not an especially difficult task until after the pathogenic forms became known and artificial culture mediums were developed, when the difficulty of distinguishing between the pathogenic and the innocuous forms arose. At present, it is recognized that the nature of the pseudopodia and the ectoplasmic and endoplasmic differentiation are unsafe diagnostic characters by which to identify amebas; for these have been shown to vary widely in the same species under different conditions of environment. Gradually improvements in cultural methods, recognized nuclear differences and other dissimilarities in ameboid types of rhizopods have made generic separations among them imperative. Accordingly, the old genus *Ameba* has been distributed by a protozoologist into a series of allied genera: Ameba, Vahlkampfia, Nägleria, Craigia, Trismastigameba and Parameba.[1]

This growing complexity has been accompanied by changing views regarding the pathogenesis of some of the species. At one time some authors regarded all amebas as being without significance in relation to disease, because of the frequently reported presence of these forms in the stools of apparently healthy individuals. Thus, in 1905 Craig examined 200 persons not suffering with dysentery, and found amebas in sixty-five. Doubtless, periods occur in the course of amebic dysentery in which symptoms are entirely lacking. The recognized existence of unharmed or immune carriers of other types of organisms makes it seem less strange today than it might have seemed a few years ago to learn that there are some individuals apparently perfectly healthy who harbor amebas in large numbers for long periods without any unfavorable symptoms. Of course, lesions may exist without becoming evident during life. Strong[2] has expressed the questions at issue as follows: Are the instances cited cases of natural resistance or immunity against the parasite; or are they instances in which the parasites are unable to exert any harmful action until the proper symbiotic bacteria appear in the intestine, and are only awaiting this moment to become pathogenic; or are they cases in which the organisms are still incapable of producing any injury until through some mechanical disturbance a small erosion in the mucosa occurs; or are they instances of infection with an ameba harmless to man?

Between the extremes of opinion, that all amebas are harmful, and that none really have etiologic significance per se, it seems safe to say at present that the *Endameba histolytica* and its near relatives are pathogenic, whereas the *Endameba coli* may be a harmless inhabitant of the human intestine, where it lives on the available bacteria. In 1906, Captain Craig of the United States Army observed a small ameba in the human intestine in six cases of chronic diarrhea. He named it *Parameba hominis*, but it was later given the new generic designation *Craigia* in honor of its discoverer. Although its habitat in the human intestine was undisputed, the question as to its possible relation to chronic diarrhea has called for confirmation. Evidence of this sort has recently been furnished by Dr. Barlow,[3] of the Medical Department of the Cuyamel Fruit Company of Honduras.

In the course of Barlow's investigations concerning the prevalence of intestinal parasites on the coast of Honduras, a flagellated organism, differing from *Endameba histolytica,* was observed in numerous cases. All of these had presented symptoms of mild dysentery or chronic diarrhea. The additional fact that no cases of flagellates were found without the symptoms, along with other features which need not be detailed, have led to the identification of the parasite as *Craigia hominis* (Craig's *Parameba hominis*), and the indictment of it as the etiologic factor in the intestinal disease.

Craigiasis has accordingly been defined as a diseased condition of the body produced by infection with protozoa belonging to the genus *Craigia*. It is probable that the latter has a wide distribution. Craig's cases were all in residents of the Philippine Islands, or recent arrivals from there. Barlow's cases were found in Honduras. They have been grouped from among those furnished with drinking water from certain supplies. The grouping has been so marked that Barlow is strongly inclined to attribute the chief source of infection to polluted water, though the possibility of introduction of the parasites by direct or indirect contact is not excluded. It is reported that patients with craigiasis may remain as carriers for a long time.

In its morbid anatomy, this disease doubtless involves comparatively superficial ulcerations of any or all parts of the intestine, with a tendency to the formation of abscesses in the liver, and possibly in other organs. Secondary changes in other parts of the body, due either to intoxication from the derangement of function of the damaged organs, or to the entrance of bacteria in the lesions produced by the parasites, may occur. Among the many therapeutic measures tested, the only effective treatment was found to be either with emetin (alkaloid), hypodermically, or ipecac, internally.

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[1] Calkins, G. W.: Genera and Species of Amoeba, Tr. XV Internat. Cong. Hyg. and Demography, Washington, 1912, ii, 287.

[2] Strong, R. P.: Amoebic Dysentery: Osler's Modern Medicine, 1907, i, 499.

[3] Barlow, N: Craigiasis, Am. Jour. Trop. Dis. and Prev. Med., 1915, ii, 680.

THE IMPORTANCE OF AGGLUTINATION IN IMMUNITY

The well-known phenomenon of agglutination of bacteria by homologous immune serum has received little consideration as a factor in the defense of the organism against infection. Gruber and his associates, in their classical work on the nature of agglutinins, expressed the opinion that these substances were of primary importance in the protective mechanism of the body. They believed that the englobement of the bacteria by the leukocytes in vivo in the presence of immune serum was aided by the agglomeration of the bacteria and their accumulation in the different organs of the body. Subsequent investigators, although appreciating the great value of the reaction of agglutination in the diagnosis of certain infectious diseases and in the differentiation of varieties of bacteria, were unable to find experimental evidence in vitro in support of Gruber's hypothesis. Now, indeed, it is almost the general view of immunologists that the part played by the agglutinins in immunity is merely incidental and subordinate, the important factors being other antibodies such as the opsonins, bacteriolysins and antitoxins.

Some important observations pertaining to this phase of immunity have recently been made by Bull[1] which indicate a wide disparity between the results of agglutination experiments in vivo and in vitro. In an investigation of the manner of the rapid disappearance of pneumococci and other organisms from the blood stream of infected rabbits, following the injection of immune serum, it was found that the serum caused an almost instantaneous agglutination of the organisms. Smears taken from the heart's blood of the rabbit a few seconds after the injection of the serum often revealed a marked clumping of the invading bacteria. Furthermore, these clumps rapidly accumulated in the internal organs, especially the liver and spleen, where they were taken up by the assembled polymorphonuclear leukocytes and ultimately destroyed. These reactions were specific, as in the test-tube experiments, but agglutination seemed to take place in dilutions of serum which were entirely ineffective in experiments made in vitro. In all of Bull's researches, including instances of both natural and passive immunity, the agglutination of bacteria in the blood of the infected animal was followed by phagocytosis and destruction of the organisms in the viscera of the body, and a subsequent disappearance of the bacteria from the blood stream. It was observed, however, that when agglutination was not complete, a few organisms remained in the blood, later to multiply and cause a fatal bacteremia. In view of these facts, it seems probable that the agglutinins, like the opsonins, antitoxins and bacteriolysins, are important protective elements.

These observations are of great value in emphasizing the intricate nature of the protective mechanism in the animal body. The evidence at hand does not minimize the importance of other well-known phenomena occurring in the reaction to bacterial invasion, but emphasizes the cooperation of antibody actions and leukocytic activity as the forces on which depends the outcome of the struggle between many forms of infection and resistance.

ABOLISHING SECRECY AND MYSTERY IN "PATENT MEDICINES"

Nearly a year ago—Dec. 31, 1914—the New York Board of Health made a notable revision of the sanitary code. The revised code requires that on and after Dec. 31, 1915, no proprietary or "patent medicines" shall be sold in the city of New York until certain requirements have been met. The essential requirement is that the names of all ingredients for which therapeutic effects are claimed, and of all other ingredients, except such as are physiologically inactive, shall be furnished the department of health. A statement of the quantities of these ingredients is not required. This information will be given in confidence and will not be open to inspection by the public or any other than the official custodian of such records or those duly authorized to prosecute the laws, municipal, state and federal. An alternative is offered. Instead of depositing this information with the department of health, the exploiters of "patent medicines" may print on the label conspicuously, clearly and legibly the name—not quantity—of each ingredient in the product. If this is done, the preparation is removed from the class designated by the section of the code as constituting a "proprietary and patent medicine."

As was to be expected, this move on the part of the health authorities of the city of New York for the better protection of the public health met instant and active opposition on the part of "patent medicine" makers. Some of this opposition was described in the Propaganda Department of The Journal, Jan. 16, 1915. Many meetings have been held and much perfervid oratory dispensed by the "patent medicine" makers and their henchmen in the apparent attempt to bluff the health department. A good deal of the talk is, doubtless, of the same nature and for the same purpose as that indulged in by the small boy who passes the lonely churchyard after dark. Whether it has had the result of keeping up the flagging courage of those who might perforce be tempted otherwise to bey this new law in the interest of the public health remains to be seen.

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[1] Bull, C. G.: The Agglutination of Bacteria in Vivo, Jour. Exper. Med., 1915, xxii, 484.

As the time for the enforcement of the ordinance comes nearer, that which originally seemed to be solid opposition begins to change. The *Weekly Bulletin* of the Department of Health of the City of New York for Oct. 23, 1915, reproduces a letter, signed by some leading wholesale druggists and dealers in proprietary medicines, in which the health department's registration ordinance is endorsed. These concerns go even farther. Not only do they signify their intention of selling only patent and proprietary articles that have registered under the new law, but they also "go on record as favoring a federal law regulating the sale of patent and proprietary articles, for the same reasons which brought about the passing of the above mentioned local ordinance." The names of the druggists and dealers who thus exhibit a wholesome respect for the public health and a due regard for the laws of their city are: Bakst Brothers, Britt, Loeffler & Weil, Bruen, Ritchey & Co., Eimer & Amend, Henry Klein & Co., Lehn & Fink, C. S. Littell & Co., Matz & Cohen, McKesson & Robbins, Schieffelin & Co., and Towns & James. These wholesale druggists and dealers have also sent a communication to the manufacturers of the patent and proprietary medicines informing them that they intend complying with the ordinance and would, therefore, request the manufacturers to make their articles legally salable, and in their letter they add, "As federal legislation of a similar nature seems to be impending, compliance with these new requirements seems to be more urgent in order to make your products salable in all parts of the country."

The New York ordinance is unquestionably a step in the right direction, a forward move in the interest of public health and safety. It would be more desirable if the ordinance required, without alternative, a definite quantitative declaration on the trade package of the active ingredients of each product. If the people desire to treat their own ailments — as they have a perfect right to do — they should know what they are getting in the preparations sold for the relief of such ailments. Nevertheless the New York law will, even in its present form, give a much larger degree of protection than has heretofore been possible. Dr. Goldwater, commissioner of health, is to be congratulated on the not inconsiderable service he has performed in bringing about the enactment of this ordinance. It is a service that is not confined to New York City alone, for every forward movement, no matter how local, is far reaching in its moral effect.

THE BOWEL MOVEMENT

"It may sound like a Hibernianism, but food does go down the [alimentary] tract more easily because it is put in at the upper end." This quotation, from a recent article[1] on the motor functions of the intestine, furnishes the text for what ought to be an important consideration in relation to the movement of the bowels. Nothing in the daily life of man is of greater import for his comfort and health than the proper evacuation of the alimentary canal. For some reason, the origin of which is not easily discovered, civilized man in the higher walks of life has attempted to establish an artificial habit with respect to this function. One copious movement of the bowel early every day — soon after rising — is regarded by thousands as conforming to a normal, healthful, physiologic routine. Precisely as the failure to perform this act once a day is popularly looked on as a menace to comfort and even good health, so its more frequent occurrence is not uncommonly the occasion for worry lest diarrhea or other forms of impaired alimentary behavior may be at hand.

What is the physiologic moment for the evacuation of the bowel? Is there any urgent theoretical reason why it should occur at any particular time, or rather, why habit should select for it the time immediately after rising? To the individual employed in business or other vocational pursuits, convenience may dictate the advantage of discharging a disagreeable duty at the most convenient moment, so as to be relieved from personal inconvenience during the remainder of the day. One may as reasonably, however, establish the habit of one meal a day or two meals at fixed hours, and disregard "the call of the stomach."

Even the most cursory observation of the higher animals shows that the emptying of the bowel does not conform to the fixed routine of infrequent defecation to which man has intentionally become resigned. The newer physiology of the alimentary tract clearly teaches that there are natural periods when peristaltic waves are initiated which would naturally induce an emptying of the lower bowel in due time. Every part of the intestine is in a state of activity which can be played on and modified by impulses reaching it from all portions, above and below. Hertz[2] has demonstrated in the case of man that, with the passage of food out of the stomach, the ileocecal valve relaxes, and material travels through the colon at the same time. These features have been emphasized by Alvarez,[1] who notes that the promptness with which a mouthful of food introduced in the stomach causes material to pass through the ileocecal valve or to rush through the colon shows that the human intestine exhibits the characteristic long-distance reflexes.

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[1] Alvarez, W. C.: The Motor Function of the Intestine from a New Point of View, The Journal A. M. A., July 31, 1915, p. 388.

[2] Hertz, A. F.: Jour. Physiol., 1913, vii, 55.

Every one can recall the desire for evacuation which is frequently felt after a liberal meal. In children the movement of the bowel soon after feeding is familiar. Both adults and children have schooled themselves to repress the natural postprandial impulses to defecate; these impulses are not compatible with our social engagements. Custom in this respect is regulated by convenience rather than by physiologic considerations.

The question may well be raised whether this disregard of natural stimuli is not a potent factor in the widespread manifestation of constipation. Undoubtedly, habitual response to the normal incentives to defecation soon after the introduction of food into the stomach would be a wholesome reform. The facts of physiologic science speak for it. The roentgenologist knows that a contrast meal will go down the bowel faster if followed, a few hours later, by food. The effect of more than one stool per day, moreover, would bring timely relief from those all too familiar symptoms of malaise which have made us a nation of "pill-loving" sufferers. Of course, the "patent medicine" interests would suffer, but the bowel of man, which, according to Keith, contains enough muscular tissue in its colonic wall to form a mass as large as the biceps of a blacksmith's arm, ought to be expected to do its duty unaided.

Current Comment

BACTERIA IN THE AIR

To the air has long been attributed a subtle potency to incite disease when suitable conditions prevail. One need not go back far in history to reach the days when "night-air" and "sewer-air" were feared as the bearers of indefinable dangers to health. The discovery of the rôle of micro-organisms in the transmission of disease has largely changed this attitude. It is true that air from certain localities, such as soils or sewers, may contain an admixture of gaseous impurities—carbon monoxid and dioxid, marsh gas and hydrogen sulphid—which are not wholesome to the organism. But these admixtures are, in all except the most unusual circumstances, so small in amount as to have little if any harmful significance for health. The organic or solid impurities of the air give more cause for alarm, for they include the living bacteria. In sewer-air the proportion of micro-organisms is usually less than that of streets and houses, and they are usually harmless species. The movement of air in sewers is rather slow, so that abundant opportunity is afforded for the suspended particles, including the living agents, to become deposited on the moist surfaces. The gaseous components of the air are of secondary moment. There is a growing conviction, however, that in the majority of cases of so-called "air-borne" disease it is not the particulate constituents of the atmosphere that are directly responsible for the transmission of disease. Suspended particles, including bacteria, may, of course, be sprayed about by the acts of coughing and sneezing and thus aid in the dissemination of diseases, particularly those of the respiratory tract. But as a rule it appears that the diseases conveyed through the air are carried through the agency of insects acting as vectors or as hosts for the infective parasites. In many hospitals, therefore, the "air-borne" diseases are now treated side by side in the same ward without fear of greater transmission than if they were isolated in separate wards. Attention is centered on the possibility of the carrier agency, animate or inanimate, rather than on the atmosphere as such. As a recent speaker expressed a phase of it, the problem is one of wire screens more than of ventilation. It is, however, of interest to learn something regarding the prevalence of bacteria in the air of different regions. A recent systematic study by the New York State Commission on Ventilation[1] showed clearly that the air of occupied spaces such as factories, schools and offices contains more bacteria than that of open spaces in the city or country. It is significant that the increase in streptococci manifests itself promptly in the occupied spaces. Whereas in country or city air there are rarely more than ten of this group of micro-organisms per hundred cubic feet of air, the number may rise to more than forty in factories. There is a rapidly growing tendency, supported by much convincing evidence, to teach that ventilation has nothing whatever to do with either the transmission of the so-called "air-borne" diseases or the lessening of their transmission. Furthermore, the opinion is freely expressed that transmission by way of the air is of infinitely less importance than transmission by inanimate and animate carriers that have been in intimate contact with patients.[2] Nevertheless, the indisputable facts just cited regarding the comparative distribution of certain objectionable bacteria in occupied spaces still deserve respectful consideration in relation to the problems of public health.

MEDICAL MEN AS COLLEGE PRESIDENTS—WILBUR PRESIDENT OF LELAND STANFORD

In three instances during the last few years, medical men of national reputation have been selected as presidents of prominent universities. In 1913 Dr. Frank Fairchild Wesbrook was elected president of the newly established University of British Columbia at Vancouver. Dr. Wesbrook had for several years been dean of the University of Minnesota, College of Medicine and Surgery, where he had shown a remarkable administrative ability. He had been professor of pathology and bacteriology in that institution for eighteen years, and was also a prominent figure in various public health movements, having been elected president of the American Public Health Association in 1905. At the beginning of the present year Dr. Livingston Ferrand was elected president of the University of Colorado. Dr. Ferrand for several years had been the executive secretary of the National Association for the Study and Prevention of Tuberculosis, and the marked success of this body was largely due to his ability as an organizer and administrator. Word has now been received that Dr. Ray Lyman Wilbur of San Francisco has been elected president of Leland Stanford Junior University, a chair occupied until 1913 by David Starr Jordan and since that time by John Casper Branner. The latter accepted the chair with the understanding that a successor should be elected in 1915, when he would have reached the retiring age of 65. Dr. Wilbur has demonstrated a remarkable ability as an organizer and as an administrator, having occupied the deanship of Leland Stanford Junior University, School of Medicine, since 1910, and the chair of medicine since 1899. He has taken an active part in the discussion of educational problems during the last several years. The selection for the presidency of prominent universities of men who are familiar with the problems of medical education and public health gives promise of a deeper interest in those problems by the educators of the country and will lead to a wider dissemination among the people generally of information in regard to hygiene and the prevention of disease. The experience these men have had in medical affairs, furthermore, gives them a broad view which will aid them in their administrative duties, particularly in the last two universities, which have medical departments.

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[1] Browne, W. W.: Bacteria in City, Country and Indoor Air, Science, Sept. 10, 1915, p. 351.

[2] Cf. Abbott, A. C.: Ventilation in Its Relation to Air-Borne Disease, Science, Sept. 10, 1915, p. 358.

PUBLIC HEALTH PROPAGANDA IN CHINA

The spread of the educational propaganda in public health work is strikingly illustrated in articles in the July number of the *China Medical Journal,* the greater part of which is given up to a discussion of this subject. Dr. Arthur Stanley, health officer of China, discusses "How to Initiate Public Health Work in Chinese Cities"; Dr. Wu Lien Teh, medical officer to the Foreign Office of Harbin, "Awaking the Sanitary Conscience of China"; Dr. E. S. Tyau, "A Plea for a Campaign of Public Health Education in China," and Dr. W. W. Peter of the Council on Public Health, "Public Health Education in China." Evidently the problems, difficulties and remedies adopted differ surprisingly little from those in our own country. Dr. Teh, for instance, after enumerating the many insanitary customs of the Chinese, says that they have for centuries practiced a system of simple hygiene peculiarly adapted to their needs. They wear suitable clothes for summer and winter, drink tea, avoid alcohol, eat cooked food and are moderate in many things. The result is that many diseases frequently occurring in Europe and America are distinctively uncommon in China. Instruction through the public schools and the churches is recommended; and also the organization of the women of the community for public health work. Educational exhibits of photographs, charts and instructions in Chinese are also used. The Chinese prototype of the "Save the Babies" pamphlet, printed in large quantities and distributed by the American Medical Association, is an exhibit chart in Chinese characters entitled "Shelter the Babies." Wire screening, fly traps, "patent medicine" advertisements, lantern slides, illustrations and other educational methods are being used. Bulletins are being sent to the teachers and pupils in mission schools, and every effort is being made to develop public health sentiment among the people. Certainly the gospel of good health is being widely preached when China begins to educate her millions.

A NATIONAL ENTRANCE EXAMINATION BOARD

During the week beginning June 19, 1915, under the auspices of the College Entrance Examination Board, 4,941 high school students were examined for entrance to eighty-two colleges and universities, of which thirty-two had medical departments. The examination covered seventeen subjects, for each of which three examiners had been selected, two being teachers in colleges and one a teacher in a secondary school. Altogether, therefore, there were fifty-two examiners, experts in their various subjects, who prepared the questions. The examinations were held simultaneously in thirty-eight states of this country, altogether in 154 different localities. The examination in each city was given at some educational institution, under supervisors and proctors selected by the secretary of the board. After the examination papers were completed, they were placed in charge of readers who did the grading. This year 166 readers were appointed, and of these, seventy-nine were representatives of colleges and eighty-five were representatives of secondary schools. In fees from candidates examined, $26,090 was received. For the preparation of the questions and other services the fifty-two examiners were paid $1,719 for salaries and expenses; for grading the papers, the 166 readers were paid $15,254 for salaries and expenses; for supervision of the examinations and for proctors, $3,650 was expended for salaries and expenses.[1] Here we have an examining board which for fifteen years has been conducted on a nearly self-supporting basis; which gives a thorough, reliable examination recognized — so far as we have been able to learn — by all colleges and universities. The board will arrange to conduct its examinations in any locality where five or more applicants can meet, thereby making them convenient for the student, who is free to seek admission to any college of his choice. Since the opportunity to take a well-conducted and reliable examination has thus been made so convenient, one wonders why all examinations in high school branches could not be conducted by this board. It would do away at once with confusion of standards and ratings resulting from the multiplicity of agencies now conducting "examinations" and issuing "certificates," the value and reliability of which are so uncertain. Here is an examination of known quality to replace uncertainties. Here, indeed, seems to be the solution of what is still one of the gravest problems of medical education — the securing of a thorough and reliable "equivalent" credential by those who have not been fortunate enough to complete courses in standard high schools or colleges whereby they could be excused from examination. Meanwhile, the organization and methods of the College Entrance Examination Board also furnish many practical suggestions which would be of value if the organization of other examining boards, national in scope, should be deemed advisable.

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[1] Those interested in preliminary examination should read the Fifteenth Annual Report, which may be obtained from the secretary of the board, Dr. Thomas S. Fiske, Substation 84, New York City.

RABIES

The modest report[1] of the results of antirabic inoculation at the Pasteur Institute in Paris for 1914 is another reminder that this classic therapeutic procedure of the great French scientist has brought down the mortality of a dreaded danger almost to the vanishing point. It is safe to say that the probable mortality of the usual run of cases untreated by the Pasteur method would be far more than 16 per cent. In 1912, 1913 and 1914, there were treated successively, *in the original institute*, 395, 330 and 373 persons, without a single death. Could anything speak more eloquently of this invaluable contribution to mankind which has made it possible to save, literally, thousands of persons in the few years that have intervened since those eventful days in the summer of 1885 when the first patient received antirabic treatment in Paris? The fact that among human beings rabies is no longer common in civilized countries, because early preventive antirabic treatment is successfully applied in almost all infected subjects, ought not to be allowed to obscure the danger of infection which is still possible. A remark attributed to Pasteur and reported by Sir Victor Horsley before the Royal Commission on Vivisection in 1907 deserves to be quoted because of the still timely advice contained in it. "The freedom of England from rabies," said Horsley, "I take to be one of the great achievements of modern science: and we owe it entirely to M. Pasteur. . . . I had the honor of acting as secretary of a committee that was appointed by the government to inquire into M. Pasteur's treatment; and, when the committee was in Paris, M. Pasteur said to us, 'Why do you come here to study my method? . . . You do not require it in England at all. I have proved that this is an infectious disease: all you have to do is to establish a brief quarantine covering the incubation period, muzzle all your dogs at the present moment, and in a few years you will be free.'" The passing of the muzzling act and rigid legislation regarding the importation of dogs have caused a practical eradication of rabies in England. This was largely due to Pasteur's influence. Shall other civilized countries continue to neglect the obvious duty of stamping out rabies, and to require the maintenance of special institutes to provide for emergencies largely within the control of suitable preventive measures?

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[1] Viala, J.: Les vaccinations antirabiques à l'Institut Pasteur en 1914, Ann. de l'Inst. Pasteur, 1915, xxix, 306.

Maternal Impressions.—Maternal impressions and prenatal culture are not facts, but superstitions. To realize their falsity, no deep researches are necessary; nothing more is needed than a knowledge of some elementary facts and scientific thought about those facts.—*Jour. Heredity.*

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DELAWARE

Physician Receives Verdict.—Dr. Evan W. Roberts, Milford, received a verdict of $2,000 against the Queen Anne Railroad, October 23, on account of injuries received when the automobile in which he was riding was struck by a train.

New State Society Officers.—The one hundred and twenty-sixth annual meeting of the Delaware State Medical Society was held in Wilmington, October 12, and the following officers were elected: president, Dr. George I. McKelway, Dover; vice president, Dr. James T. Massey, Viola (reelected); secretary, Dr. George W. K. Forrest, Wilmington (reelected); and treasurer, Dr. Samuel C. Rumford, Wilmington (reelected). The society approved the establishment of a national board of medical examiners. The subject of the presidential address delivered by Dr. Henry W. Briggs, Wilmington, was "The Physician, Past, Present and Future."

DISTRICT OF COLUMBIA

Washington Health Rules.—A booklet entitled Washington Health Rules has been published by the Association for the Prevention of Tuberculosis of the District of Columbia. The book contains twelve chapters, each of which is based on one of the health rules first promulgated by the association in 1912. The booklet is to be placed in the hands of each teacher in the public schools.

The Evolution of Man.—Dr. Ales Hrdlicka, curator of anthropology in the National Museum, delivered an address before the Anthropological Society of Washington and the Medical Society of the District of Columbia, October 13, in the medical school building of George Washington University on "The Evolution of Man in the Light of Recent Discoveries and Its Relation to Medicine."

Personal.—Dr. Howard Fisher, Washington, has returned after several months of hospital work in Europe.——Dr. and Mrs. James McKee celebrated their golden wedding anniversary, October 12. Dr. McKee is a Civil War veteran and has been connected with the medical division of the Pension Bureau since 1902.——Dr. Lewis J. Battle, chairman of the medical committee which served during the Grand Army of the Republic encampment, was the guest of honor at a banquet given by the medical men on his committee, October 7. Nearly 100 local practitioners were present and Dr. A. Barnes Hooe presided as toastmaster.——Dr. Frank Fremont-Smith, while examining a revolver at his summer home at Bar Harbor, Me., was accidentally shot, but is making satisfactory progress toward recovery.——Dr. George von Pullinger Davis, Washington, has gone to Salt Lake City as professor of physiology in the University of Utah.——Under the auspices of the National Society of Keep Wells, Dr. William T. Davis, Washington, gave a talk in the parish hall of St. John's Church, October 29, on "The Eye—Its Uses and Abuses."

FLORIDA

Object to Occupation Tax.—Physicians of Tarpon Springs have asked the city council to exempt them from the medical license fee of $10 per annum, stating that they do sufficient charitable work to warrant this exemption.

Health Trains Soon in Operation.—The three Pullman cars which are being fitted up for the traveling exhibit of the State Board of Health are ready for the installation of the apparatus and should be ready to start on the first trip early this month. Every town in the state will be visited and demonstrations and lectures will be given.

Hospital Notes.—On September 27, application was made to the judge of the Circuit Court of Escambia County, for a charter incorporating the Pensacola Hospital.——The Pensacola Hospital was opened to receive patients, September 1, and is now in full operation.——The School for Nurses of the Pensacola Hospital was opened September 15. Twenty nurses have been enrolled for service, five of whom are pupil and nine probation nurses.——The Clearwater Hospital, built by the city of Clearwater at an expense of $25,000, and having an endowment of $100,000 given by Mr. M. F. Plant, will be opened this month.——Physicians and surgeons of Marianna and Jackson County are making plans to build a hospital in Marianna during the coming winter.——The City Owned Hospital Association was organized at Jacksonville, September 6, Dr. Mark B. Herlong being elected president, and Dr. Marvin H. Smith, secretary.——Plans for the Miami hospital have been approved by the directors and there is $50,000 available for construction, $30,000 of which is in the possession of the city, while bonds have been issued for the remaining $20,000.

ILLINOIS

Citizen Gives Medical Books.—A citizen of La Salle has made a gift to the Public Library of $10,000, the interest of which is to be used for buying medical books.

Superintendents Association Meets.—At the annual meeting of the Association of Superintendents of State Charitable Institutions held in Springfield, October 12, Dr. Henry J. Gahagan of the Elgin State Hospital was elected president, and Dr. William F. Schulz, superintendent of the Chicago Industrial Home for the Blind, secretary.

Foot and Mouth Disease.—The state supreme court has now issued an opinion, October 27, that the state board of live stock commissioners have the right to kill all cattle afflicted with foot and mouth disease. The state veterinarian, however, says that if the herd of Mrs. Scott Durand is found free of the disease, they will be spared.——Foot and mouth disease was discovered in five new localities in McDonough County, October 27, and on the following day, 108 head of cattle and 500 hogs belonging to Samuel Dougherty, and valued at $28,000, were slaughtered.

Scarlet Fever.—At Decatur an extensive epidemic of scarlet fever has existed for some time. On account, it is said, of the failure to cooperate on the part of the medical profession, the local health authorities have been unable successfully to cope with the epidemic. At the meeting of the city council, October 13, it was voted to employ an expert physician to assist in eradicating the disease. For this position, Dr. H. L. Wright, formerly of the health department of Chicago, was suggested and authority was given to employ Dr. Wright.——Dr. Charles E. Crawford of the State Board of Health has ordered school, churches and motion-picture shows in Pecatonia closed on account of the increasing number of cases of scarlet fever in the city.

Personal.—Dr. John R. von Achen, Peoria, has been appointed deputy coroner of Peoria County.——Dr. Joseph P. Comegys, Rock Island, fractured his arm while cranking his automobile, October 27.——Dr. Ben B. Griffith, secretary of the State Board of Health of Springfield, has resigned.——Dr. John D. Mandeville, Champaign, is reported to be seriously ill in the Julia F. Burnham Hospital in that city.——Dr. Wiliam S. Holliday, Monmouth, was operated on for appendicitis at the Monmouth Hospital, October 23, and is reported to be doing well.——Drs. William H. Maley and William O'R. Bradley have been appointed local surgeons of the Illinois Traction System in Galesburg.——Dr. Oliver O. Dyson, state veterinarian, who has been ill with typhoid fever at his home in Springfield, is convalescent and has returned to his duties, including the supervision of the state fight on foot and mouth disease.

Chicago

Personal.—Drs. Joseph M. Blake and George R. McAuliff were painfully injured in a collision between the automobile in which they were riding and an auto truck, October 25.

Psychopathic Clinic.—The first municipal psychopathic clinic was opened this week at the Iroquois Memorial Hospital under the direction of Dr. Harold N. Moyer, head of the psychopathic division of the new school of sanitary inspection of the department of health.

t) **Physicians' Club Meets.**—At the first meeting of the sea-
rec of the Physicians' Club of Chicago at the Hotel Sherman,
of th ber 19, Municipal Judge Jacob H. Hopkins, John L.
exhibi nan, superintendent of the Bridewell; Emory Sanford
Chinese he architect, and Miss Harriet Vittum of Northwestern
"Save the ty Settlement, were the speakers.
and distrib al **Safety.**—Physicians interested in the forming
is an exhibit of th and safety of industrial establishments in the
ter the Babies. he City Club, October 15, for the organization
al Association of Industrial Physicians and
committee having this matter in charge is
J. Chase Stubbs, Harry E. Mock, Andrew

M. Harvey, Wilber E. Post, F. M. McCurdy, William C. Lucas and C. G. Farnum.

INDIANA

Chiropractor Fined.—It is reported that William H. Monks, a chiropractor, was fined $25 by a jury in the Indiana Circuit Court, recently, for practicing medicine without a license. It is stated the case will be appealed to the supreme court.

Personal.—Dr. Herbert M. Senseny has been appointed local surgeon for the Nickel Plate System at Fort Wayne.——Dr. John Richards, for fifty-three years a practitioner of Laud, celebrated his eightieth birthday anniversary, October 21.——Dr. John Herman Wylie and wife, formerly of Bluffton, sailed from San Francisco for China, November 6. Dr. Wylie's new post of duty will be in a hospital established in North China by the Rockefeller Institute.——Dr. John P. Franz, Indianapolis, was painfully injured in a collision between his automobile and a street car, recently.——Dr. Henry P. Metcalf, New Salem, was thrown from his automobile and seriously injured, recently.——Dr. Guy A. Schultz, Lebanon, has declined appointment as assistant surgeon to the National Soldiers' Home, Johnson City, Tenn.

MARYLAND

Faculty Changes.—At the meeting of the faculty of the School of Medicine of the University of Maryland, Drs. Ridgley B. Warfield, Gordon Wilson, William S. Gardner, Harry Friedenwald and Arthur M. Shipley were elected members of the executive committee; Dr. Randolph Winslow was elected president of the faculty; Dr. John W. Chambers, vice president; Dr. James M. H. Rowland, secretary, and Dr. Samuel K. Merrick, treasurer.

Personal.—Dr. Lewis C. Spencer and Dr. Martillus H. Todd of the American staff of surgeons at Pau Hospital base in France have returned to Baltimore. Both physicians were on the staff of the Johns Hopkins Hospital until their departure for Pau.——Dr. Marshall B. West, health officer of the first district of Baltimore County, is confined to his home in Catonsville with a badly infected hand. He is reported as being slightly improved.——Dr. William F. Lockwood has been selected as dean of the School of Medicine of the University of Maryland, succeeding Dr. R. Dorsey Coale, deceased.

To Fight White Plague.—Following discussions of the question of tuberculosis in Baltimore and the means needed to hold it in check, steps were taken recently at a meeting in the Medical and Chirurgical Faculty Building to organize physicians, nurses and social workers engaged in fighting tuberculosis not only in the city, but in the state. The meeting and the action that grew out of it were the results of an effort of those engaged in preventive and curative work among tuberculosis patients to bring about a standardization of methods and to facilitate exchange of data and thus minimize duplication. Dr. Henry Barton Jacobs, president of the Maryland Association for the Prevention and Relief of Tuberculosis, acted as chairman of the meeting and at its conclusion appointed a committee to elect officers and organize the new body, the committee being formed of the heads of the various medical and social organizations for the relief of this disease.

MICHIGAN

Municipal Hospital Opened.—The new Municipal Receiving Hospital at Antoine and McComb streets, Detroit, which has been erected at a cost of $250,000, was formally opened October 12. The building will accommodate 135 patients and will be under the charge of Dr. Leo J. Dretzka. The main objects for this hospital are the provision of a clearing house for emergency cases and of a psychopathic ward for the mentally disturbed.

Personal.—Dr. George A. Trueman was elected mayor of Munising, October 17.——The resignation of Dr. Marinus L. Holm, Lansing, as bacteriologist for the branch laboratory of the State Board of Health at Houghton, has been accepted.——Dr. Samuel E. Barnhart, Battle Creek, who was seriously injured, September 26, at Pomona, Calif., in a collision between his automobile and a railway train, the injuries including the fracturing of both arms and seven ribs, is reported to be convalescent and has returned to Battle Creek.——Dr. Albert F. Stone, Bay City, caught his left hand in the gearing of the self-starter of his automobile, September 30, sustaining injuries, which necessitated the amputation of the terminal phalanges of the first and third fingers.

MISSOURI

Recognition Withdrawn.—It is reported that the Missouri State Board of Health, by unanimous vote at a meeting held October 18, declared the University of West Tennessee Medical Department of Memphis an unaccredited medical college in the state of Missouri.

New Public Clinics.—Public clinics for diseases of the eye, ear, nose and throat and for genito-urinary diseases, have been recommended by Dr. Paul Paquin, director of public health of Kansas City. Both of these clinics will be held at the Waterworks Building.——The dental clinic is to be transferred to the Karnes School.

Personal.—Dr. John A. Pringle, assistant superintendent of the Springfield City Hospital, has been appointed temporary superintendent, succeeding Dr. Frank E. Chapman, resigned.——Dr. Lincoln C. Chenoweth, Webb City, has been elected a member of the Board of Control of the Jasper County Tuberculosis Sanatorium.——Dr. George I. Mays, Joplin, who has been seriously ill in St. Vincent's Hospital, New York City, is reported to be improving.——Dr. Vincil B. Janes, Cameron, was seriously injured in a railway accident near Sheldon, recently.

St. Louis

Clinic Club Organized.—The St. Louis Clinic Club was organized, October 12, with about twenty charter members. Dr. George Richter was elected president, and Dr. Frederick A. Baldwin, secretary treasurer.

Personal.—Dr. Ellen M. Osborn was thrown from her buggy, October 20, by a collision with a coal wagon, and suffered a fracture of the nose and severe contusions of the face.——Dr. Leo Loeb has been appointed professor of comparative pathology in the medical school of Washington University.——B. Landis Elliott, instructor in physiology in Washington University, is reported to be ill with trichinosis in Barnes Medical Hospital.

NEW YORK

Vassar College in Welfare Work.—The students of Vassar College have raised a fund of $1,200 to support a district nurse for the town of Poughkeepsie.

Personal.—Dr. Henry L. Elsner is ill at his home in Syracuse.——Dr. Andrew R. Ellis, Roxbury, has been obliged to give up his medical practice on account of ill health and has moved to Livingstonville.

Lectures on Oral Hygiene Discontinued.—The State Department of Health announces that as the legislature made no appropriations for the services of the two lecturers on oral hygiene hitherto attached to the staff of the department it is necessary to discontinue this valuable work.

Boarding Houses for Tuberculosis Patients.—The state aid charities association and the committee on the prevention of Tuberculosis of the charity organization society of New York City have prepared a list of country boarding houses for tuberculosis patients to which any one interested can have access.

Popular Health Lectures.—The first of a series of public health lectures which the Albany Medical College has offered to the public was given October 13 in the auditorium of the State Education Building, Albany, by Dr. Herman M. Biggs, health commissioner of New York, on "The Public Health Law of New York State."

Municipal Piggery for Saranac Lake.—The Saranac Lake Board of Health proposes to establish a municipal piggery in which to dispose of properly sterilized garbage from the village. It is believed that the piggery will produce a revenue that will pay for the cost of garbage collection. This experiment is attracting wide attention throughout the state.

New York City

Harvey Society Lecture.—The second lecture of the Harvey Society series given at the New York Academy of Medicine, November 6, at 8:30 p. m., is by Prof. A. J. Carlson of the University of Chicago on "Recent Contributions to the Physiology of the Stomach."

Dr. Goldwater Quits Health Department.—Dr. Sigismund S. Goldwater, who has been commissioner of health for the past two years, relinquished the duties of his office, November 1. Dr. Goldwater handed his resignation to the mayor, July 1, stating that he had accomplished about all that he could under present conditions and was desirous to return to his work as head of Mount Sinai Hospital. Dr. Haven Emerson, deputy health commissioner, will succeed Dr. Goldwater.

Loving Cup Given.—Dr. George Chaffee, Bay Ridge, founder of the New York and New England Association of Railway Surgeons, was presented with a handsome silver loving cup by the association at its twenty-fifth annual session, October 21. The cup bears the following inscription: "Presented to Dr. George Chaffee, Founder, Ex-President and Corresponding Secretary of the New York and New England Association of Railway Surgeons, by the Ex-Presidents in Grateful Recognition of Twenty-Five Years of Devotion and Loyalty to the Association, 1890-1915."

Personal.—Dr. Abraham Sophian has returned from Europe.——Dr. William J. Maloney, who was seriously wounded while serving with the British troops at the Dardanelles, sailed for home, October 23.——Dr. Frank D. Jennings, Bushwick, was assaulted near his home, October 20, and rendered unconscious. The reason for the attack is unknown.——Dr. Harold Kniest Faber, formerly of the Rockefeller Institute, has been appoined assistant professor of pediatrics at the Leland Stanford University, San Francisco.

Health Department Strengthens Patent Medicine Ordinance.—At its last meeting the board of health strengthened the Goldwater Formula Disclosure ordinance which is to become effective Jan. 1, 1916. The vital paragraph of the section read: "The names of the ingredients of every such medicine shall be registered in the department of health in such a manner as the regulations of the board of health may prescribe." It was felt that this was not sufficiently clear and in addition certain patent medicine interests having declared their intention of disregarding the ordinance, the above paragraph has been amended to read: "The names of all ingredients to which the therapeutic effects claimed are attributed and the names of all other ingredients except such as are physiologically inactive shall be registered in the department of health in such a manner as the regulations of the board of health may prescribe."

NORTH CAROLINA

Leeward Islands Want Medical Men.—The government of the British West Indies has been advertising in North Carolina papers during the past few weeks, for capable young medical men to serve six months or longer in medical service in the Leeward Islands. These positions offer admirable opportunities for the study of tropical diseases.

Enforcement of Vital Statistic Laws.—The State Board of Health has placed a special agent in the field who will devote his attention to securing the enforcement of vital statistic laws. His work will be chiefly to impress on physicians, undertakers and others, the necessity of filing their reports of deaths and births promptly. In other words, this will be a campaign of education.

Hospital Notes.—The physicians and business men of Greensboro met October 5 to formulate plans for the establishment of a new general hospital in the city.——The Twin City Hospital Association, Winston-Salem, is endeavoring to raise an endowment fund of $100,000 for a city hospital, and the association will contribute $10,000 of this amount, provided the city secures the balance of $90,000.

Personal.—Mrs. R. S. Boyers has been elected municipal health officer of High Point and Mrs. J. E. Sells, health officer of Winston-Salem.——Dr. Albert Anderson, superintendent of the Raleigh State Hospital, has returned after an extended tour of inspection of psychopathic institutions in the East.—Dr. Edward C. Register, Charlotte, has been elected president of the American Medical Editors' Association.

PENNSYLVANIA

State Board Examination.—The State Bureau of Medical Education and Licensure announced, October 27, that medical examination for state licenses would be held at Philadelphia, January 18 to 20.

Laboratory for Allegheny General Hospital. — It is announced that the children of the late William H. Singer, Pittsburgh, will erect, equip and endow in his memory at a cost of $400,000, a research laboratory in connection with the Allegheny General Hospital.

Tuberculosis Home Opens.—The new buildings of the department for the treatment of tuberculosis of Allegheny County at Woodville, Pittsburgh, were dedicated September 2. The camp is situated on a hill about a mile from the main buildings of the county home.

Philadelphia

Medical Institutions.—The department for diseases of the chest of the Jefferson Hospital, 236 and 238 Pine Street, has opened a pay ward to a limited number of male patients suffering from pulmonary tuberculosis.

Personals.—Dr. Luther C. Peter has been elected associate professor of diseases of the eye in the Philadelphia Polyclinic and College for Graduates in Medicine.——Dr. Charles A. E. Codman, president-elect of the Medical Society of the State of Pennsylvania, was tendered a dinner and reception by the West Philadelphia Medical Association at Hotel Rittenhouse, October 26. Dr. John Welsh Croskey, president of the society, was toastmaster and spoke of the movement under way to make Philadelphia a world medical center and urged those present at the dinner to work toward this end.

WEST VIRGINIA

Trachoma Hospital Opened.—Surg. John McMullen, U. S. P. H. S., opened a trachoma hospital at Welch, October 4, with accommodation for twenty patients, and it was almost filled from the start.

Smallpox.—In a bulletin of the West Virginia Public Health Council, Dr. S. L. Jepson, State Health Commissioner, says, that in the past three years West Virginia has had 7,000 cases of smallpox and so far as has been ascertained, only 2 per cent. of these persons had ever been vaccinated. It is said that the most intense prejudice against vaccination exists in all parts of the state, based on false reports and erroneous beliefs as to the injurious results alleged to follow vaccination. Among the foolish and misleading reports was one that a number of patients had been taken to Wheeling to have their arms amputated as a result of vaccination. This report, Dr. Jepson says, was entirely baseless, and in more than forty years of experience in the practice of medicine, he had never seen as a result of vaccination anything worse than a sore arm. He calls attention to the vast financial loss to the state on account of this ignorance and prejudice which has resulted in the expense of quarantine and caring for the 7,000 cases during three years. Local health officials have been instructed by the State Health Council no longer to establish quarantine, but merely to placard the houses containing smallpox patients. It is said that if unvaccinated persons persist in refusing such a simple but positive preventive, there is no reason why the people in general should be taxed rigidly to quarantine and guard houses for their sole benefit.

WISCONSIN

Kenosha Sanatorium Nearly Ready.—The Kenosha County Sanatorium, which is being erected on an 87-acre site at a cost of $32,000, will be ready to receive patients December 1. The institution will accommodate twenty-four patients.

Sterilizing Law to Be in Effect.—The Wisconsin sterilization law, passed by the legislature of 1913, will, it is said, be put into actual operation by the State Board of Control in November when twenty-four inmates of the Home for the Feeble-Minded, Chippewa Falls, will be operated on. The work, which is being carried on in an effort to cope with the problem of stopping the propagation of children by feeble-minded and degenerate parents, will be continued as fast as circumstances will permit.

War on Quacks.—A war on "quack" doctors and "fake" medical institutes in Milwaukee has been begun. Arrangements have been made by the health department for free consultation and advice in connection with venereal diseases for all those who apply at the bacteriologic laboratory of the health department in the city hall. Dr. E. V. Brumbaugh of the health department will be in attendance. Following the plan adopted by New York City, no remedies will be prescribed, but those asking advice will, after the diagnosis is made, be urged to consult reputable physicians for treatment.

CANADA

Saskatchewan Hospital News.—A medical staff will be organized in connection with the Regina Grey Nuns' Hospital. A new nurses' home has recently been completed and will shortly be occupied. The necessary funds for the Saskatchewan Hospital Unit are now nearly in sight and only final instructions are awaited from the Imperial Government before proceeding with the work of organization.——The Isolation Building in connection with the Regina General Hospital is to be used for a nurses' home until a new building is completed.

Defectives in Toronto.—Dr. Charles K. Clarke, superintendent of the Toronto General Hospital, has dealt with 1,000 mental defectives, a great percentage of whom are juvenile criminals, at his clinic for feeble-minded children. It has been impossible to confine the clinic to children and he now treats adults. All efforts to obtain assistance from the provincial government and the Toronto civic authorities having proved fruitless, no very great results can be expected. Dr. Clarke states he has barely touched on the great number of criminally disposed feeble-minded adults and children. Of those treated during the past year only a few have reached institutions owing to the congested condition of all the provincial institutions for the insane and feeble-minded. He states that juvenile crime in Toronto has increased 100 per cent.

Personal.—Dr. Thomas C. Brandon, Watford, Ont., has been appointed surgeon in the British service and will leave in a few days for the front.——Dr. James Gow, Windsor, was painfully injured in a collision between automobiles, October 1.——Dr. Joseph A. Andrews, Indian Harbor, Labrador, reached New York, October 1, and reports that an epidemic of beriberi has existed among the natives of Indian Harbor.——Sir Wilfred Grenfell of Labrador was one of the speakers at the Interdenominational Medical Missionary Conference at Battle Creek, November 2 to 5.——Lieut.-Col. Henry R. Casgrain, Windsor, Ont., in charge of No. 3 Stationary Hospital at Alexandria, Egypt, reported seriously ill, is now on his way back to England. Just before sailing news of his condition was reassuring.——Drs. Vanwycke and Crompton of Toronto were added to the staff of the University of Toronto Base Hospital as captains before the unit sailed for the Mediterranean on October 16. Lieut.-Col. P. Walter H. McKeown of Toronto did not accompany the hospital but remained in England as president of a medical board to advise the pension board. Dr. Thomas G. Brodie returned to Toronto; Dr. Alfred H. W. Caulfield remains in London, and Dr. J. George A. Campbell who is ill will remain in England for a month or two.——Dr. Harry Morell, editor of the *Western Medical News*, Regina, Sask., is at present attached to the Canadian Red Cross, Duchess of Connaught Hospital, Taplow, Bucks, England. He is in charge of the pathologic department. The hospital has accommodation for 1,000 patients.

GENERAL

McCoy to Succeed Anderson.—Surgeon-General Rupert Blue, U. S. P. H. S., has announced the appointment of Surgeon George W. McCoy as director of the Hygienic Laboratory, Washington, succeeding Surgeon John F. Anderson who recently resigned to accept private employment. Dr. McCoy is at present in charge of leprosy work at Molokai, Hawaii.

Leprosy in the United States.—In an address made by Dr. William A. Pusey, Chicago, before the Chicago Medical Society, October 27, he stated that there are about 500 cases of leprosy in the United States, of which 275 were in Louisiana, 100 in New York City, 50 on the Mexican frontier and 5 in Chicago. He advocates the establishment of a general leprosarium.

Railway Surgeons Hold Meeting.—At the annual meeting of the Railway Surgeons' Association of Pennsylvania Lines East, in New York City, October 18 to 20, the following officers were elected: president, Dr. James B. Siggins, Oil City, Pa., vice president, Dr. Charles J. Roberts, Berwyn, Pa.; secretary, Dr. Amos W. Colcord, Clairton, Pa., and treasurer, Dr. Joseph C. Egbert, Wayne, Pa.

Accident Board Officers Elected.—At the meeting of the National Association of Industrial Accident Boards and Commissions, held in Seattle, October 2, Floyd L. Daggett, Olympia, was elected president; Wallace D. Yaple, Columbus, Ohio, vice president, and L. A. Tarrell, Madison, Wis., secretary treasurer. It was decided to hold the next annual meeting in Columbus, Ohio, April 25 to 28, 1916.

Pellagra Conference.—At the third triennial conference of the National Association for the Study of Pellagra held in Columbia, S. C., October 21 and 22, the following officers were elected: president, Capt. Joseph F. Siler, M.C., U. S. Army; vice presidents, P. A. Surg. R. M. Grimm, U. S. P. H. S., and Henry W. Rice, Columbia, S. C.; secretary, Dr. James W. Babcock, Columbia, S. C., and treasurer, Dr. James A. Hayne, Columbia, S. C.

Dakota and Montana Physicians Unite.—Physicians of western North Dakota and eastern Montana met in Williston, N. D., October 19, and organized the Kotana Medical Association, including Divide, Williams, McKenzie and the western half of Mountrail counties, as well as the Montana counties adjoining North Dakota. Dr. Melverton E. Trainor was elected president; Dr. Edward J. Hagen, vice president, and Dr. Frank W. McManus, secretary-treasurer, all of Williston. The next session of the association will be held in Williston.

Social Hygiene Problems Discussed.—At the annual meeting of the American Social Hygiene Association held in Boston, October 8, Pres. Abram W. Harris, Northwestern University, was elected president in the place of Dr. Charles W. Eliot, Cambridge, Mass.——The Central States Conference on Problems of Social Hygiene, under the auspices of the association, was held in Chicago, October 25 and 26, at which the subjects discussed were "The Social Hygiene Movement," "The Education and Moral Aspects of the Social Hygiene Movement," "Public Health," and "The Aspects of the Problem of Prostitution."

Prevention of Infant Mortality.—The preliminary program for the sixth annual meeting of the American Association for the Study and Prevention of Infant Mortality, to be held in Philadelphia, November 10 to 12, is most attractive. The general subjects discussed have been already noted in The Journal. The Bellevue-Stratford Hotel will be the general headquaters and here all the sessions, with the exception of the joint session with the Philadelphia County Medical Society on Economic Aspects of Infant Welfare, will be held. This latter session will convene at the College of Physicians, November 10 at 8:15 p. m.

Bequests and Donations.—The following bequests and donations have been announced:

Alice Home Hospital, Lake Forest (Ill.), and Lake Bluff (Ill.) Orphanage, each $5,500, the proceeds of the Lake Forest Country Fair.

Chicago Home for the Friendless, residuary beneficiary, and Eastern Maine General Hospital, Bangor, Maine, $5,000, by the will of Luther H. Pierce, Chicago.

Aid Association of the Philadelphia County Medical Society, $5,000, by the will of Dr. Eugene I. Santree.

Cancer Commission of Harvard University, the income from $25,000, by the will of William Endicott.

Cancer Commission in the City of Boston, $23,250, by the will of Julia M. Moselet.

Associated Jewish Charities and Jewish Consumptives Relief Society, Chicago, each $10,000, by the will of Bernard Baumgarden.

University of California, Berkeley, a donation of $10,000, as an endowment for a bed in the University Hospital of the University California Medical School, San Francisco, in memory of his wife, the late Belle Garber Pellache, and her brother, the late Joseph B. Garber, by Whitney Pellache, New Haven, Conn.

Tuberculosis Week.—As has been previously announced by the National Association for the Study and Prevention of Tuberculosis, Tuberculosis Day will this year be expanded into Tuberculosis Week, taking place December 6 to 12. For this week the National Association suggests three special days—National Medical Examination Day, December 8; Children's Health Crusade Day, December 10, and Tuberculosis Sunday, December 12. Circulars describing the general scope, plan and aim of the movement have been prepared and are sold by the National Association at 15 cents per 100. Sermon outlines have also been prepared and are sold at 25 cents per 100. It is suggested that these circulars be placed in the hands of teachers, ministers and others. A special circular on Medical Examination Day will be issued later and also some special literature on Children's Crusade Day. It is said that the object of the National Medical Examination Day is to secure the interest of physicians, employers of large groups of labor and lastly workingmen of all kinds. It is not hoped to have everyone examined on this day, but the object is to arouse interest so that people will be set to thinking about periodical medical examinations. It is suggested that the interest of physicians should be aroused by having the matter presented in the local medical society, where, if the general plan is approved, a wholesale rate of examination during a stipulated period might be fixed at $2.50 to $3, this examination to include a complete physical examination and such bacteriologic and chemical analysis as may be necessary. In Michigan, recently, it is said, at the request of the governor, nearly 500 physicians participated in Tuberculosis Day, making a large number of free examinations of tuberculous patients.

FOREIGN

Typhus in Australia.—According to a dispatch from Melbourne an epidemic of typhus fever has broken out in Victoria, Australia, where 447 cases have been reported with 144 deaths.

Nobel Prize to Vienna Physician.—It has been decided to award the Nobel prize for 1914 to Dr. Robert Bárány of the University of Vienna, on account of his work on the physiology and pathology of the ear.

Wood Alcohol Kills.—In a telegram from Berlin of October 18, it is stated that of 100 workmen, who while shipping wood alcohol from Nijni-Novgorod, Russia, opened a barrel and drank from it, twenty are dead and the remainder seriously ill.

Yellow Fever.—On October 5 it was reported that a young engineer had died from yellow fever in the Ancon (C. Z.) Hospital. The disease was contracted in Colombia.——Under date of October 27, it was reported that yellow fever is epidemic in Buena Ventura, Colombia.

WAR NOTES

Harvard Hospital to Be Continued.—Dr. E. H. Nichols, who organized the Harvard British Hospital at the front, announces that it will be maintained for another year and asks for applications from surgeons, physicians, dentists and nurses who are willing to serve with another Harvard Surgical unit in a British hospital. Transportation charges will be paid both ways and the pay will be the regular army rates with additional allowances. Preference will be given to Harvard medical men and young graduates at hospitals. The term of service will be at least six months. Application should be made to H. H. White, University Press, Cambridge, Mass.

Typhoid Mortality Reduced by Inoculation.—Dr. Leo Bernard reports that out of 800 cases of typhoid fever in French soldiers which he studied, the mortality of those who had been given the antityphoid inoculation was only 5½ per cent., while among the unvaccinated it was 17 per cent. He believes that if the triple inoculation had been made as in this country, the death rate would have been much lower.

American Physicians Decorated.—It is reported from Nish that Crown Prince Alexander of Serbia has decorated forty-three American physicians and sanitary engineers representing the Rockefeller Foundation and the American Red Cross, in recognition of their services in checking the typhus epidemic in Serbia.

Personal.—Dr. B. W. Caldwell and other physicians of the American Red Cross contingent from Serbia passed through Rome, October 29, on their way to Germany by way of Switzerland, to assist in the care of Russian prisoners on German soil.——Drs. Edward Stewart, Ralph W. Mendelson and Stanley Osborn, members of the staff of Lady Paget's Hospital at Uskub, Serbia, are believed to have been captured by the Bulgarians.——Drs. Taylor Jones, Thomas W. Jackson and George W. Mellon, who have been on duty in Serbia, and Dr. M. H. Todd, who has been on duty in a war hospital in France, reached Boston from Europe, October 21.——Drs. W. M. Lacy, W. A. Lane, W. J. Dodd, R. R. Sattler, Channing Simmons and Paul Withington, who went abroad with the Harvard unit, reached New York, October 19.

BERLIN LETTER

Berlin, Oct. 5, 1915.

Personal

Prof. Adolf von Baeyer, the father of German chemistry, will celebrate his eightieth birthday, October 31. With the beginning of the present semester he retired from his professional duties. He was appointed von Liebig's successor at the University of Munich in 1875, and for forty years he has been actively engaged in carrying on the work begun by von Liebig. Baeyer had much to do with the advancement of chemical knowledge in Germany; in fact, to him is due the credit of having placed it on the high plane it now occupies. Many of our best chemists have been trained under Baeyer. Among these one might mention Emil Fischer and Richard Willstätter; the latter probably will be Baeyer's successor. Baeyer discovered artificial indigo, a discovery on which rests the enormous development of the German dye industry. No other scientific discovery has ever led to such enormous financial and commercial advancement as the investigations made by Baeyer in 1865, which led to the discovery of indigo.

Reorganization of the Berlin Health Department

For many years the Berlin Medical Society has asked that the administration of the local health department be in keeping with the increase in population and the demands of present-day hygiene. The authorities have now met this demand by making provision for the creation of a city health bureau whose personnel is sufficient assurance for the proper administration of health laws. Nurslings, schoolchildren and recent graduates will receive such attention as should be given them by an adequate health department. Suitable provisions have also been made for the control of tuberculosis, alcoholism, venereal diseases and for the regulation of all hygienic matters pertaining to light, air, water, sewerage, food, housing, etc., the prevention of epidemics, disinfection, and the control of the sanitation of all municipal institutions. The municipal inspection bureau, administered until recently by the late Professor Proskauer, was placed under the jurisdiction of the health department. This department is not under the charge of a director, but of a committee or bureau, the president being the city physician, who is also the chairman of the health board. The health bureau is divided into a medicinal and a social hygiene division. The director of the latter is Professor Grotjahn, a man who has distinguished himself in this field. His writings on social pathology are well known. The director of the medicinal division has not been appointed. The health board has complete control of all health matters, and its decisions are final. All matters pertaining to health, hygiene and sanitation must be referred to this board or bureau. The city physician may attend the meetings of other bureaus in which health questions are under consideration, and participate in the work. He is also privileged to inspect all institutions concerned with hygienic work. He must be kept advised of any health activities participated in by other bureaus, and receive timely notice of all meetings at which such questions will come up for discussion, so that he may make arrangements to be present in person or by proxy.

Infant Mortality Among the German Nobility During the Nineteenth Century

Professor Schlossmann, director of the Children's Clinic in Düsseldorf, has made a study of infant mortality in the reigning families of Germany. His figures show that there has been a consistent and steady lowering of the infant mortality in each decennial period from 1800 to 1900. From 1800 to 1810 the death rate was 13.3 per cent.; in 1850 it was only 6.6 per cent., and in 1870 it was only 3 per cent. Among the older children, those under 14 years, the death rate during the first decade was 24.1 per cent., and in the last decade it was 8.6 per cent. In some families the mortality was extraordinarily high. The highest mortality was found in the house of Nassau. It was 35.1 per cent. In the house of Anhalt it was 30.7 per cent. among all the children, and 23 per cent. among the nurslings. Liechtenstein had only 2 per cent. mortality among its nurslings, and Bavaria 9 per cent. total children's mortality. The conclusion to be reached as the result of these observations is that the mortality among the children of the nobility today is much lower than it was a hundred years ago, and Professor Schlossmann is convinced that the progress made in hygiene is bound to lower these mortality figures considerably, not only among the nobility but among the populace in general. The regulation of infant feeding and the improvements made in housing are the two prime factors concerned in this reduction of the mortality. Schlossmann's findings are in accord with those published some time ago by Max Kemmerich, who showed that the duration of life is greater and the mortality lower among the royal families than it was a hundred years ago. This is also true of the people in general. Kemmerich concludes, therefore, that the oft-made statement that cultural and economic success lead to racial degeneration is wrong, and that the opposite is true.

PARIS LETTER

Paris, Oct. 7, 1915.

The War

TREATMENT OF ARTICULAR WOUNDS

This was the subject of an interesting discussion at the last session of the Réunion médicale de la IV-e armée. Dr. H. Fresson discussed particularly penetrating wounds of the knee. Care must be taken to avoid death, amputation and ankylosis. Early operation should be the rule in all penetrating wounds of the knee joint, without exception when there is a projectile or foreign body in the wound. Injections of iodoformized ether may be utilized in the exceptional cases of small penetrating wounds without any foreign body or in cases in which penetration is doubtful. This method, without other procedure, has given Fresson three recoveries. Simple arthrotomy is a classical bilateral arthrotomy with deep, long incisions to reach all the pockets; posterior drainage is thus avoided. Gauze drains dipped in iodoformized ether are placed transversely and renewed each day. A plaster and metal splint is placed in position immediately after the operation. During the following period, it is necessary to guard closely against the possibility of purulent fistulas, which must be eradicated, especially on the side of the popliteal fossa. Horseshoe arthrotomy with section of the patellar tendon is indicated (1) in cases of fracture of the patella necessitating an operation on that bone; (2) when bilateral arthrotomy will not give an opportunity to reach the foreign body; (3) when the classic arthrotomy will not be sufficient to arrest the evolution of the arthritis.

Attempts at flexing the knee should be begun as soon as possible. After the operation, the treatment demands great care. The results will be good in proportion as the operation has been performed early.

Dr. Anselme Schwartz, agrégé professor at the Faculté de médecine de Paris, and surgeon of the hospitals, divides articular wounds into three classes from the therapeutic point of view: (1) articular fractures; (2) articular wounds without osseous lesion; (3) articular wounds with slight osseous lesions.

In articular fractures, the treatment is, in the main, the same as in nonarticular fractures: opening up of the soft parts, removal of fragments and foreign bodies, careful cleansing and drainage of the focus. There is, however, one particular which distinguishes articular from nonarticular fractures; this is the necessity, in general, of completing the operation by a complete and regular resection.

Articular wounds without osseous lesions seldom occur except at the knee. Such a lesion is always caused by a very small projectile. There is a small orifice in the soft parts and an articular effusion. In two cases Schwartz has followed the following line of conduct: All is prepared for complete operation; then the course of the projectile is explored. If it leads into the synovial, arthrotomy is immediately performed. If it is doubtful, the course of the projectile is explored under anesthesia, and if it leads into the joint, operation is performed.

Articular wounds with slight osseous lesions are the most delicate cases. Here it is necessary to be guided by certain principles of general surgery: 1. It is permissible to sacrifice bone more freely in the arm, in which mobility is sought, than in the leg, in which the aim is solidity. Resections therefore may be made more liberally in the arm than in the leg. 2. There are certain differences among the various articulations; resections of the elbow and the shoulder and ablation of the astragalus give excellent results. 3. Certain articulations are more easily drained than others. In the knee, lateral patellar incisions, and if necessary, the transverse incision, give good drainage, while it is impossible to drain the elbow well without resection. As for immediate amputation, no matter what the gravity of the case, it ought to be a very rare exception.

Dr. Maurice Chevassu, agrégé professor at the Faculté de médecine de Paris and surgeon of the hospitals, is convinced that for articular wounds the question of time is perhaps most essential of all. Early operations give in general good or excellent results; late operations on the other hand give mediocre or bad results.

INTENSIVE TREATMENT OF SYPHILIS IN THE HOSPITALS

It may be readily understood that much interest is felt at present in reducing to a minimum the duration of the stay in hospital of syphilitic soldiers affected with contagious manifestations, in order that they may be sent back to the ranks as soon as possible. In a previous letter (The Journal, Aug. 28, 1915, p. 813), I mentioned a report from Drs. Dalimier and Debat on the treatment of syphilitic manifestations in soldiers by short and intensive courses of arsenic and mercury. Dr. André Bernheim has recently reported to the Société de médecine de Paris the technic which he employs in the service organized by Professor Gaucher and directed by Dr. Butte at the Chaptal Hospital. An injection of 0.03 gm. of mercury benzoate (1:100 solution) or red mercuric iodid is given daily. In order to reinforce the action of the mercury and at the same time to hasten its elimination, the patient each day takes a glass of water containing sulphids and every three days takes a sulphur bath. He is given a supplementary ration of a liter (about a quart) of milk. In the course of each meal, he takes a pill containing 1 mg. of arsenic trioxid and 1 mg. of strychnin sulphate. The patient uses a tooth brush and a tooth powder of mentholated chalk. Every day a nurse paints the gums with a 1:50 solution of chromic acid. During this intensive course, the patient is kept under very close observation, the urine being examined every six days. At the same time the local lesions are actively treated, the chancres being thermocauterized at a short distance and then dusted with calomel, the mucous plaques painted successively with 1:10 silver nitrate and 1:15 chromic acid and papulosquamous syphilids covered with Vigo's plaster [a 20 per cent. mercury plaster]. This intensive treatment may be carried out in any kind of a hospital organization. It permits the cicatrization of chancres in a period varying from five to sixteen days, and mucous plaques and secondary syphilids in fifteen days on an average.

LONDON LETTER

London, Oct. 15, 1915.

The War

THE SUPPLY OF ARMY SURGEONS

The consulting physicians and surgeons to the British expeditionary force in France have issued a statement that they have observed with some regret that many physicians have resigned their temporary commissions in the medical corps. No doubt a considerable proportion of these are recalled to Great Britain by personal and public claims on their services which they could not neglect. After a few months of comparative quiet, some of them have perhaps found the work monotonous. Those physicians who contemplate applying for commissions in the army are asked to consider the matter in another light. In order to insure a successful issue to the war our army and navy must show the greatest patience and tenacity of purpose. The same is true of the work of the medical profession. A similar tenacity of purpose and an equal patience are required in addition to the skill and energy which every battle calls forth. The excitement of great and moving events is necessarily transient, and men must be prepared to do their duty steadfastly during long periods of dulness. Yet it is during these dull periods that the services of the army surgeon are really of the greatest value, though they may be dull and uneventful to himself, and it is during these intervals that he gets into that close touch with officers and men which gains their confidence and gives him an influence without which mere professional knowledge is not of much avail. It is no doubt monotonous to be constantly watchful of the cleanliness of billets, to supervise food, to prevent parasitic infections, to treat sore feet, diarrhea or muscular rheumatism, and to do the thousand and one things which help to keep the soldier an efficient fighting man. But the medical officers who does these things is doing at least as much for his country as the man who performs operations or treats typhoid. The staffs of the field ambulances have also to deal with many minor ailments of little interest, but every division is dependent on them for the rapid return to the regiments of those whose illnesses are too slight to justify a return to England.

THE SIGNIFICANCE OF ABNORMAL SIGNS IN THE RECRUIT'S HEART

At the request of the War Office, Sir James Mackenzie has drawn up a memorandum to serve as a guide to medical examiners of recruits. He points out that the healthy heart in the young can exhibit murmurs, and variations in rate and rhythm, which are perfectly physiologic in origin and indicative neither of disease nor of impairment. Before examining the heart he recommends that the functional efficiency be found out by ascertaining how it responds to effort. This is shown by the amount of exertion the candidate has been accustomed to take in the past in his work or play, and if he can undergo severe bodily exertion without distress. The physiologic murmurs are always systolic in time, and the situation of the greatest intensity may be at the apex, midsternum, or base of the heart. If the candidate's response to effort be normal, and the heart normal in size, the murmur is negligible; for if the cause which produced the murmur hampers or embarrasses the heart in its work, the size of the embarrassed chamber will increase and its functional efficiency be impaired.

Only two forms of irregularity need be considered. Irregularities indicating serious mischief, such as the irregularity of auricular fibrillation or of heart block, will be associated with such diminution of the functional efficiency that the candidate would not seek to recruit. The most common irregularity is that which occurs in the healthy heart of the young. It is characterized by a lengthening and shortening of the pauses between the beats; it will often be found to vary with respiration, the beat increasing in rate during inspiration and decreasing during expiration. When it does not have the characteristic respiratory character it can be made to take on the character if the candidate is made to breathe slowly and deeply for a few minutes. It is frequent in perfectly healthy hearts, and is, therefore, of no importance. In rare cases the pulse may be found intermitting more or less frequently. If the heart be auscultated, two short sharp sounds rapidly following one on the other may be heard during the pause. If this is the only sign present, that is, if the functional efficiency of the heart be good and the size normal, then these extrasystoles are of no significance and the candidate should not be rejected. Many candidates whose hearts are perfectly healthy suffer from palpitation or excited action during examination. The beat becomes forcible and rapid, and a systolic murmur may be present. If such a candidate be told to lie down and breathe slowly and deeply for a few minutes, the heart's action becomes less violent and the rate slows during expiration. With a history of good functional efficiency, the candidate may be considered suitable for enlistment.

CASUALTIES FROM THE ZEPPELIN RAID

A fleet of airships has visited London and the eastern counties and dropped bombs with the following results: Twenty-seven men, 9 women and 5 children were killed, and 64 men, 30 women and 7 children were injured. Of these casualties, 32 killed and 95 injured occurred within the London area.

THE HEALTH OF THE ARMY

Prof. H. R. Kenwood, a well-known authority on hygiene, who has been appointed as an expert to the army in France, has made an interesting report on his branch of the medical work. Early in the war it was considered that the special circumstances demanded some strengthening of the sanitary personnel, and so additional sanitary sections were formed, each consisting of a commissioned officer, four noncommissioned officers and twenty-five men, one section being attached to each division. These sections were recruited from a good class of men, well trained, and including men who had had experience of sanitary work before enlistment; the staff sergeants, sergeants and corporals were generally inspectors in civil life, and the rank and file were mostly from the building and engineering trades; each section had its own motor lorry to carry its equipment. The duties of these special sections ranged from skilled sanitary work, such as disinfection, the purification of water, etc., to the construction of crude incinerators, simple arrangements for the bathing of the troops fresh from the trenches, and scavenging. Their skill has enabled many difficulties to be overcome. Many improvisations have had to be fashioned to suit novel conditions and difficulties, such as the destruction of vermin, the eradication of the fly population in a country which is highly manured under an intensive system of cultivation, the disposal of the carcasses of horses, etc. Steam is used to disinfect clothing and textile articles, and cresol solution is applied to infected surfaces. With regard to the drinking water, the circumstances of the campaign caused special precautions to be taken from the first. The army water carts were originally furnished with batteries of filters, capable of arresting the germs of water-borne disease, and mobile laboratories were equipped with the means of making a chemical and bacteriologic examination of any water supply which it was proposed to issue to the troops. But these precautions were soon supplemented by more effective measures, and since the early days of the war all the water issued has been previously treated as if it certainly contained the germs of typhoid, and in a manner that would effectually dispose of such organisms were they present. In short, the drinking water is chlorinated under skilled direction, and the result is an always safe water supply. The preventive measures against typhoid are as complete as science and ingenuity can devise, and the results have been exceptionally good. Although the figures of the units vary, the large majority of the forces have been inoculated against this disease, and this proved of the greatest value. The noninoculated British soldier is found to be between fourteen and fifteen times more liable to catch typhoid than the inoculated soldier. Precautions against "carriers" are also taken. Mobile laboratories with skilled bacteriologists go from place to place for the systematic examination of the feces of large numbers of men.

Marriages

Clarence Leon Fessenden, M.D., Fulton, N. Y., to Miss Louise W. Ryder of Roanoke, Va., at Towanda, Pa., October 20.

Archibald Wright Graham, M.D., to Miss Alecia Madden, both of Chisholm, Minn., at Rochester, Minn., September 29.

Fred William Robinson, M.D., Sturgis, Mich., to Miss Mildred Leonora Clarke of Milford, Conn., October 16.

William Duncan McKim, M.D., Washington, D. C., to Miss Leonora Jackson, in New York City, October 12.

James Stuart Pritchard, M.D., Ottawa, Ont., to Miss Myra Bradwell Helmer of Chicago, October 21.

Francis Leo Daly Scanlan, M.D., to Miss Margaret B. Williams, both of Syracuse, N. Y., October 20.

Walter Gerald Nuessle, M.D., Lansford, N. D., to Miss Helen Nippolt of Tacoma, Wash., September 8.

Furman Leaming Pyke, M.D., Lafayette, Ind., to Miss Inez Johnston of LaGrange, Ind., October 20.

William E. Kiser, M.D., Bellaire, Ohio, to Miss Gertrude Helen Coleman, at Dover, Ohio, October 19.

Allison Temple Wanamaker, M.D., to Miss Mary Helen Allmond Patten, both of Seattle, October 20.

Carl Shepard Oakman, M.D., Detroit, to Miss Harriet Brooks at San Antonio, Texas, October 20.

Edward J. H. Salmon, M.D., to Miss Theresa Kennedy, both of Jersey City, N. J., about August 7.

Arthur Knowlton Drake, M.D., Monmouth, Ill., to Miss Lois Potter of Galesburg, Ill., October 19.

Clarence H. Boswell, M.D., Rockford, Ill., to Miss Ruth F. Ward of Flushing, N. Y., October 20.

Charles L. Schang, M.D., Greenville, Pa., to Miss Susie Maxey of Vicksburg, Miss., October 18.

John S. B. Woolford, M.D., Chattanooga, Tenn., to Miss Eliza Winslow of Baltimore, October 23.

Harold M. Allen, M.D., Norway, Me., to Miss Emily Briggs of Lawrence, Mass., October 20.

James LeRoy Anderson, M.D., Winfield, Ill., to Miss Clare Leland Kinney, at Chicago, October 14.

George David Cutler, M.D., Boston, to Miss Jessie Barr Wright of St. Louis, October 19.

Conrad B. Vonnahme, M.D., to Miss Mary Rung, both of East St. Louis, Ill., October 31.

Patrick H. O'Malley, M.D., to Miss Elda Sharples, both of Chinook, Mont., October 8.

Roger Paul Dawson, M.D., to Miss Marguerite A. Long, both of Boston, October 20.

Deaths

John Henry Huddleston, M.D. Harvard Medical School, 1891; aged 51; a Fellow of the American Medical Association; a trustee of the New York Academy of Medicine; a member of the American Climatological Society, American Public Health Association, Association of Military Surgeons of the United States, and National Association for the Study and Prevention of Tuberculosis; a director of the Metropolitan Life Insurance Company; visiting physician to Gouverneur and Willard Parker hospitals, and the Riverside Sanatorium; consulting physician to the United Hospital, Port Chester, N. Y.; captain and assistant surgeon, Seventh Infantry, N. Y. N. G., from 1895 to 1907; Carpenter lecturer in 1902; secretary of the American Committee of the Fourteenth International Medical Congress; a trustee of the New York State Hospital for Incipient Tuberculosis; died at his home in New York City, October 30, from pneumonia.

Rear Admiral Joseph Benson Parker, M.D. Medical Director, U. S. Navy (retired). Bellevue Hospital Medical College, 1866; aged 74; who entered the volunteer service of the United States Navy, March, 1863; as an acting assistant surgeon; served in the Mississippi Squadron until his honorable discharge in 1865; and was appoined assistant surgeon, U. S. Navy in November, 1866; whose last services were the command of the Portsmouth (N. H.) Hospital and Navy Yard, the presidency of the Naval Medical Examining Board, Washington, and the command of the Naval Hospital, Washington, and who was retired June 20, 1903, with the next higher grade to that held on active list, on attaining the age of 63 years, after fifteen years and one month sea service and twenty years and six months shore or other duty; died at his home in Philadelphia, October 21.

Edmund C. Rivers, M.D. University of Maryland, Baltimore, 1879; aged 57; of Denver; a well-known specialist on diseases of the eye and ear; president of the board of trustees and professor of ophthalmology in the Denver and Gross College of Medicine, Denver; vice president of the board of directors and consulting oculist to the Denver Maternity and Woman's Hospital Association; while hunting in Barr Lake, near Denver, October 24, was drowned while attempting to save the life of a negro caretaker who was falling from his motor boat.

James A. McGuigan, M.D. Jefferson Medical College, 1862; aged 81; surgeon of volunteers during the Civil War; died at his home in Philadelphia, October 21, from heart disease. On March 8, 1912, Dr. McGuigan and Dr. William Williams Keen were the guests of honor at a dinner given by the medical profession of Philadelphia on the occasion of the fiftieth anniversary of their graduation in medicine.

Clayton L. Ransom, M.D. Willamette University, Salem, Ore., 1903; of Mill City, Ore.; a Fellow of the American Medical Association; who disappeared while hunting in the Jackson Hole country, Wyo., September 17, was found dead near his camping place, October 21, his death having been due to a gunshot wound supposed to have been accidentally self-inflicted while climbing over a log.

Eugene Shamon McCain, M.D. University of Texas, Galveston, 1903; aged 37; a Fellow of the American Medical Association and quarantine officer at Brownsville; formerly health officer at Tampico, Mexico; was shot and killed by Mexican bandits who held up and robbed a passenger train of the St. Louis, Brownsville and Mexico Railroad, about October 18.

Harvey R. McClellan, M.D. Starling Medical College, Columbus, Ohio, 1854; aged 88; a charter member of the Greene County Medical Association; for sixty years a practitioner of Xenia, Ohio; contract surgeon in the Army during the Civil War; founder of the McClellan Hospital, Xenia; died at his home in that city, October 17, from pneumonia.

Richard H. McBaine, M.D. College of Physicians and Surgeons in the City of New York, 1907; aged 32; a Fellow of the American Medical Association; a specialist on physical diagnosis; physician to outpatients in and a member of the faculty of Washington University, St. Louis; died in Barnes Hospital in that city, October 17, from septicemia.

Frederick Gillett Byles, M.D. Jefferson Medical College, 1882; aged 62; professor of hygiene and sanitation in the University of Colorado, School of Medicine, Denver; obstetrician to the Colorado Cottage Home and a member of the staff of the Denver City and County Hospital; died at his home in Denver, October 21, from arteriosclerosis.

William H. Pruner, M.D. College of Physicians and Surgeons, Baltimore, 1884; aged 60; a Fellow of the American Medical Association and for the last twenty-five years a practitioner of Washington County, Neb.; died at his home in Kennard, Neb., October 19, from prostatic abscess complicated with multiple abscesses of the kidney.

Joseph R. Huntt, M.D. College of Physicians and Surgeons, Baltimore, 1888; aged 50; mayor of Laurel, Md., for one term; formerly health officer; local surgeon of the Baltimore and Ohio Railroad and director of the Citizens' National Bank; died at his home in Laurel, October 18, from cerebral hemorrhage.

William George Kimball, M.D. Dartmouth Medical School, Hanover, N. H., 1876; aged 68; a member of the Massachusetts Medical Society; medical examiner for Hampshire County and representative in the Massachusetts Legislature in 1895 and 1896; died at his home in Huntington, October 20.

Mark H. O'Daniel, M.D. Atlanta (Ga.) Medical College, 1881; aged 53; formerly local surgeon at Jeffersonville, Ga., for the Southern Railway; for several years a member of the staff of the State Sanitarium, Milledgeville; died in Williams' Private Sanitarium, Macon, Ga., October 14.

Henry P. Mowry, M.D. Hahnemann Medical College, Chicago, 1877; aged 61; ex-president of the village of Bronson; formerly a member of the State Board of Charities and Correction; died at his home October 6, from angina pectoris.

Peter S. Leisenring, M.D. Pennsylvania Medical College, Philadelphia, 1852; aged 86; formerly professor of obstetrics in Omaha Medical College; secretary of the board of health and city physician of Omaha; formerly president of the San Diego (Calif.) Medical Society; died at his home in San Diego, October 15.

Mark Richards Crain, M.D. University of Vermont, Burlington, 1879; aged 59; a Fellow of the American Medical Association and a well-known surgeon of Rutland, Vt.; died in his office in Rutland, October 14, from the effects of morphin, self-administered, it is believed, with suicidal intent, while despondent.

Raymond Russ, M.D. University of California, San Francisco, 1900; aged 42; a Fellow of the American Medical Association; instructor in surgery in the University of California; formerly of San Francisco and San Mateo, Calif.; died at his home in Hillsborough, Calif., October 24, from tuberculosis.

Guerney Abner Gregory, M.D. Maryland Medical College, Baltimore, 1909; aged 35; of Stroudsburg, Pa.; formerly a member of the Medical Society of the State of Pennsylvania; died October 14, from acute gastritis, in the North Water Gap Sanitarium, Stroudsburg, where he was attending a patient.

William Patrick George, M.D. Washington University, St. Louis, 1875; aged 68; a member of the Arkansas Medical Society; a Confederate veteran; since 1869 a practitioner and druggist and president of the First National Bank of Berryville, Ark.; died at his home about October 13.

Alexander Perry, M.D. Vanderbilt University, Nashville, Tenn., 1905; aged 34; a Fellow of the American Medical Association; who began practice in Nashville and later was obliged to go to Denver and finally to Los Angeles in search of health; died in the latter city, October 20.

Joseph Jerome Noll, M.D. College of Physicians and Surgeons in the City of New York, 1885; aged 51; a member of the Medical Society of the State of New York; assistant physician to the New York Dispensary; died in his home in New York, October 17, from heart disease.

Samuel C. Rusmisell, M.D. Medical College of Ohio, Cincinnati, 1876; formerly a Fellow of the American Medical Association; of Buckhannon, W. Va.; president of the People's Bank of West Virginia, Buckhannon; died at his home about October 18.

Anthony J. Maslowsky, M.D. Kentucky School of Medicine, Louisville, 1907; of Mariah Hill, Ind.; formerly coroner of Spencer County, Ind.; died October 22, from injuries received in the overturning of his automobile near Rockport, Ind., the week before.

James Rankin Vincent, M.D. Medical College of Ohio, Cincinnati, 1884; aged 60; a Fellow of the American Medical Association; for many years a practitioner of Wilkinsburg and East Liberty, Pittsburgh; died at his home in East Liberty, October 23.

Frank Duane LeValley, M.D. University of Michigan, Ann Arbor, 1883; aged 58; a member of the Michigan State Medical Society and a practitioner of Vassar, Mich., since 1890; died at his home October 14, from heart disease.

John T. Hampton, M.D. Jefferson Medical College, 1879; aged about 70; a retired practitioner of Philadelphia; was found dead in his berth in a sleeping car on an Atlantic Coast Line train near Florence, S. C., October 9.

George M. Hite, M.D. Eclectic Medical Institute, Cincinnati, 1886; aged 56; of Nashville, Tenn.; also a clergyman of the Primitive Baptist Church; died in an infirmary in that city, October 21, after a surgical operation.

George W. Long, M.D. University of Pennsylvania, Philadelphia, 1874; aged 67; of Graham, N. C.; a member of the Medical Society of the State of North Carolina; died in a hospital in Statesville, N. C., October 16.

Thomas Henry Whalen, M.D. Illinois Medical College, Chicago, 1898; aged 57; who had charge of the smallpox epidemic in Tippecanoe County, Ind., in 1902; died at his home in Lafayette, Ind., October 19.

Patrick Wallace Cremin, M.D. College of Physicians and Surgeons in the City of New York, 1866; aged 74; a member of the Medical Society of the State of New York; died at his home in New York City, October 17.

Eugene Larrie Tupper, M.D. University of Minnesota, Minneapolis, 1897; aged 42; died at his home in Lima, Ohio, October 21, from organic heart disease.

Frank Butler Adams (license, Connecticut, 1893), aged 57; an eclectic practitioner of Hartford, Conn., for thirty-two years; died in St. Francis' Hospital in that city, September 23, from carcinoma of the throat.

John Clark Gauntlett, M.D. University of Michigan, Ann Arbor, 1887; aged 51; a resident of Elk Rapids, Mich., for more than twenty years; died at his home in that place, October 19, from heart disease.

George Corson Burnley, M.D. Hahnemann Medical College, Philadelphia, 1890; aged 49; a specialist on diseases of the eye; died at his home in Lock Haven, Pa., October 15, from angina pectoris.

Albert Schaffer Erney, M.D. Jefferson Medical College, 1877; aged 61; a practitioner and druggist of Philadelphia; died at the home of his son in that city, October 12, from cerebral thrombosis.

Michael J. Kenney, M.D. Marquette University, Milwaukee, Wis., 1911; aged 39; formerly a member of the State Medical Society of Wisconsin; died at his home in Manawa, Wis., October 22.

George A. Heintzelman (license, Philadelphia County, Pa., 1886), aged 81; for thirty years a practitioner and druggist of northwest Philadelphia; died at the home of his son in that city, October 19.

Adolphe Joseph Delcourt, M.D. University of Liege, Belgium, 1875; aged 68; formerly a Fellow of the American Medical Association; died at his home in Houma, La., October 16.

Charles Lee Caven, M.D. University of Southern California, Los Angeles, 1896; aged 43; a Fellow of the American Medical Association; died at his home in San Diego, Calif., October 18.

Matthew H. Sheldon, M.D. Eclectic Medical Institute, Cincinnati, 1876; aged 62; of Mt. Erie, Ill.; died in the Olney (Ill.) Sanitarium, September 17, from nephritis.

James K. Reader (license, Oregon, 1890), aged 69; a homeopathic practitioner of Ashland, Ore.; a veteran of the Civil War; died in Santa Rosa, Calif., October 11.

Amzi Jones, M.D. Vanderbilt University, Nashville, Tenn., 1900; aged 42; for fifteen years a practitioner of New York City; died at Saranac Lake, N. Y., October 22.

Clarence Ormsbee, M.D. New York University, New York City, 1865; aged 76; of Newburgh, N. Y.; died in Sadlier's Hospital, Poughkeepsie, N. Y., October 13.

Brooks A. Colomb, M.D. Tulane University, New Orleans, 1885; aged 53; president of St. James Parish, La.; died at his home in Colomb, La., September 20.

Joel F. Scott, M.D. Jefferson Medical College, 1883; aged 62; a Fellow of the American Medical Association; died at his home in Wilson, Pa., October 19.

Emil Haass (years of practice, Illinois, 1878), aged 88; for sixty years a practitioner of Will County, Ill.; died at his home in Frankfort, Ill., October 13.

James Henry Woodul, M.D. Kansas City (Mo.) Medical College, 1881; aged 80; died at his home in Whiting, Kan., September 12, from senile debility.

William J. Hicks, M.D. Medical College of Georgia, Augusta, 1889; aged 63; died at his home in Moultrie, Ga., August 5, from amebic dysentery.

Noah Woodrow Patton, M.D. Jefferson Medical College, 1884; aged 59; died at his home in Charleroi, Pa., October 14, from cerebral hemorrhage.

Samuel Chase Thayer, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1881; aged 54; died at his home in Boston, October 11.

Sidney H. Minor, M.D. University of Tennessee, Nashville, 1893; aged 46; died at his summer home near Hendersonville, Tenn., October 15.

John A. Long, M.D. Baltimore Medical College, 1893; aged 45; died at his home in Bowmansville, Pa., October 8, from heart disease.

Hardin Welch Bright, M.D. Bellevue Hospital Medical College, 1886; aged 53; died at his home in Richmond, Ky., about October 21.

Cyrus L. Harnden, M.D. University of Wooster, Cleveland, 1875; aged 65; died at his home in Clyde, Ohio, October 19.

Powhatan Bledsoe, M.D. University of Maryland, Baltimore, 1860; aged 87; died at his home in Wildwood, Va., June 24.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's actions on articles refused recognition which were not deemed of sufficient importance to require lengthy reports:

Swan's Rheumatic Bacterin (Mixed) No. 47

According to the statement of the manufacturers (Swan-Myers Company, Indianapolis, Ind.), Swan's Rheumatic Bacterin (Mixed) No. 47 contains in each c.c., pneumococci 25,000,000, Friedländer's bacilli 25,000,000 and streptococci polyvalent 450,000,000.

The Council's Committee on Serums and Vaccines held that there is no satisfactory evidence that either the pneumococcus or Friedländer's bacillus is concerned in the etiology of acute and chronic rheumatism or rheumatoid arthritis, and no conclusive evidence that the streptococcus is an etiologic factor. In view of this the committee held this mixed vaccine unscientific in composition, and hence barred from admission to New and Nonofficial Remedies by Rule 10.

The Council adopted the report of the committee and, the report having been sent to the manufacturer and the manufacturer's reply considered, authorized its publication.

Elixir Iodo-Bromide of Calcium Comp. "Without Mercury" and "With Mercury"

The Tilden Company, New Lebanon, N. Y., and St. Louis, Mo., sells "Elixir Iodo-Bromide of Calcium Comp. without Mercury" and "Elixir Iodo-Bromide of Calcium Comp. with Mercury." The latter is said to contain, in addition to the ingredients of the former, 1/100 grain mercuric chlorid in each fluidram. According to the label the formula of the elixir "without mercury" is :

> "*Formula*—Salts of Iodine, Bromine, Potassium, Sodium, Calcium, Magnesium with Stillingia, Sarsaparilla, Rumex, Dulcamara, Lappa, Taraxacum, Menispermum."

A recent circular declares that the elixir contains:

> ". . . a number of the most powerful alteratives of the pharmacopeia such as chemically pure iodin, magnesium, potassium with sarsaparilla, stillingia, prickly ash, burdock, taraxacum, etc. . . . Each fluidounce contains seventy-two grains of the combined salts."

The same circular also alleges that each dram of the preparation contains:

> ". . . the equivalent of one and one-half grains of the combined iodids, potassium and calcium . . ."

It will be observed that, (1) the two statements quoted from the circular make no reference to bromids; (2) the statement that each dram contains "the equivalent" of 1½ grains of the combined iodids, potassium and calcium, accounts for but 12 of the 72 grains of "the combined salts" per fluidounce declared in the preceding quotation; (3) the circular mentions the presence of a drug—prickly ash—not declared on the label and, finally (4) none of the "formulas" gives the quantities of all of the several constituents.

It is evident from these "formulas" that the Tilden Company continues its policy of concealment and mystification as exemplified in the cases of Hydrocyanate of Iron, Tilden (discussed in The Journal, June 19, 1909, p. 2008), Febrisol (The Journal, June 29, 1912, p. 2043) and Respirazone (The Journal, June 14, 1913, p. 1899).

In the circular just quoted ("The Conquest of Syphilis"), all hope for the syphilitic is declared to rest in mercury and iodin, and it is implied that only through Elixir Iodo-Bromide of Calcium Comp. is it possible to obtain the greatest good from these drugs.

> "Were the cleansing influences of these two drugs [mercury and iodin] unavailable to the luetic patient, he, *truly*, would be as pitiable an object as the leper . . .
>
> "Modern Pharmacy has devised no better means of utilizing these anti-syphilitics than Elixir Iodo-Bromide of Calcium Comp. (Tilden) with or without mercury. . . . the Elixir, in proper dosage, acts in specific fashion and is adapted for use in all stages of the disease.
>
> "In the early months . . . *Elixir* Iodo-Bromide of Calcium Comp. (*Tilden*) with mercury is a trustworthy weapon and the physician need have no fear but that it will subjugate the disease . . .
>
> "When . . . the virulent stage is passed . . . Elixir Iodo-Bromide of Calcium Comp. (*Tilden*) without mercury *may* be given the *patient* with every assurance that medicine's most aggressive measures are being resorted to . . . From time to time, up to the very end of the time honored three years' period of treatment, it is well to put the patient back on the bichloride, using for this purpose the form of the Elixir administered in the *first stages* of the disease . . .
>
> "*This* regime . . . will indubitably antidote the virus of syphilis and eradicate from the organism its every vestige."

While it seems incredible that any physician would jeopardize the health—even the life—of a patient by accepting this boastful magniloquence as *sound* therapeutic advice, still the fact that certain medical journals lend their advertising pages to advertisements for *Tilden's* Elixir with the caption "The Conquest of Syphilis" makes it incumbent on the Council to record its condemnation of the employment of this unscientific, semisecret mixture.

It is recommended that Elixir Iodo-Bromide of Calcium Comp. "without mercury" and "with mercury" be held in conflict with Rule 1 (secrecy of composition), Rule 6 (unwarranted therapeutic claims) and Rule 10 (unscientific composition).

THE HOROWITZ-BEEBE AUTOLYSIN TREATMENT

Some Bids and Estimates for the Treatment of Cancer

Immediately after the publication, in a popular magazine, of the *first* articles on the autolysin treatment of cancer, inquiries were received from various parts of the country in regard to this treatment and its value. Cancer sufferers were *invited* in the magazine article to write to the Autolysin Laboratory for advice regarding the treatment. Naturally *many* responded. There were strong evidences from the beginning of a commercial spirit in the exploitation of the treatment. We quote below some of the evidence. The first is a series of telegrams that passed between a Seattle physician and Dr. Beebe:

Seattle, Wash., July 7, 1915.

Dr. S. P. Beebe,
New York, N. Y.

Kindly wire me collect at once particulars of autolysin treatment for cancer. Would it be possible for you to send me some autolysin with directions for using same for the treatment of an inoperable cancer of the uterus which involves the rectum and bladder.

NEW YORK N Y JULY 8 1915

DR ——————
SEATTLE WASH

WIRE RECEIVED AUTOLYSIN NOT GIVEN OUT FOR GENERAL USE BY
PROFESSION REASON UNACQUAINTED WITH THERAPEUTIC EFFECT
AND PHYSIOLOGICAL ACTION EITHER NECESSARY TO BRING PATIENT
HERE FOR TREATMENT OR HAVE MEMBER OF STAFF IN CONSULTATION
CONSULTATION FEE HERE TWO HUNDRED FIFTY DOLLARS CONSULTATION
FEE IN SEATTLE TWO THOUSAND DOLLARS A MEMBER OF OUR STAFF
WILL BE IN CONSULTATION WITH DR W COLFAX MATTHEWS AT BUTTE
MONT JULY FOURTEENTH YOU CAN ARRANGE THROUGH HIM FOR A
CONSULTATION AT THAT TIME FOR FIVE HUNDRED DOLLARS

S P BEEBE MD

Seattle, Wash., July 8, 1915.

Dr. S. P. Beebe:

Will Doctor who is coming to Butte to give *autolysin* come on to Seattle and give treatment necessary for trial for five hundred dollars. Wire me collect.

NEW YORK N Y JULY 9 1915

DR ——————
SEATTLE WASH

WIRE REC'D OUR STAFF MEMBER DOCTOR WILLIAM E FITCH WILL
BE IN BUTTE ON THE DAY AND DATE AND AT ADDRESS GIVEN IN DAY
LETTER OF EIGHTH AND WILL COME ON TO SEATTLE FOR FIVE
HUNDRED DOLLARS AND TRAVELING EXPENSES FROM BUTTE TRUST
YOU CAN HAVE MORE THAN ONE CASE FOR TREATMENT

S P BEEBE MD

A physician in Detroit wrote to Dr. W. H. Axford of Bayonne, N. J., whose name was mentioned in one of the popular articles as having used the treatment, asking for information regarding it. The following was the reply:

NEW YORK CITY, June 30, 1915.

My dear Doctor:—Your letter addressed to Dr. Axford, c/o The Polyclinic Hospital has been referred here for attention, and we note therefrom that you have a patient suffering from cancer of the liver and you desire information pertaining to this treatment concerning which we beg to submit the following:

For more than two years "Autolysin" has been subjected to the severest possible test in that only inoperable and hopelessly incurable cases were accepted for treatment, many of whom came with the verdict of the family physician hanging over them of having only two or three months lease of life. These patients have taken the treatment and the results on the whole have been satisfactory, in many instances, the improvement was so gratifying to the patients that they left the institution claiming they were fully recovered. We, however, are not so optimistic, but we feel that we can conservatively say that in many instances there were evidences of complete clinical recoveries.

At the present time "Autolysin" is not available for general use by the profession for the reason that they are unacquainted with its therapeutic effect and physiological action which is necessary for its intelligent administration. Before we consider it a safe remedy, a physician must first be personally instructed in the technic of its administration as well as have pointed out to him just what reactions are liable to follow—which govern future dosage—and have explained to him just the way to handle and take care of these reactions when they occur.

If your patient is able to be brought to New York for treatment, the fee for examination, consultation, etc., will be $250, and the after-treatments at the rate of from $25 to $35 per week. If this patient is unable to stand the trip then it will be necessary for a member of our staff to see her in consultation with you. The fee for this trip and consultation will be $1000 and traveling expenses.

Trusting this information will serve your purpose, and that we may have an opportunity of giving your patient the benefits of this treatment, we beg to remain W. E. FITCH.

Shortly after the publication of our editorial on this treatment, the following letter, dated July 27, 1915, was received from a subscriber in St. Louis:

To the Editor:—Following the "Beebe-Horowitz" editorial in this week's number of your Journal, I am venturing to send you the enclosed copy of a communication to one of my patients.

Briefly the history of my patient is as follows: One year after an operation for gall stones, at which gall stones were found and the gall bladder left without drainage, a second operation was done for a mass that was in the scar line. This was diagnosed, clinically, as carcinoma of the gallbladder and liver. A large mass grew on the abdominal wall and the patient suffered many hemorrhages that had almost caused his death a number of times before controlled.

He was brought to my office on a stretcher and the massive dose X-ray, Coolidge tube, was administered through several ports of entry. The first treatment controlled the bleeding and the mass wholly disappeared from the wall. There was also a great diminution of the liver dulness. He gained much in weight and has returned to his work.

Following his reading of the article in *Hearst's Magazine,* he wrote to Dr. Horowitz and got the enclosed reply—not, however, until after he had departed for New York, so great was his hurry to avail himself of the treatment.

He did not get farther than the "Financial Secretary" and came home for further X-ray treatment.

The following is the letter referred to. The second and third paragraphs, which are omitted, are the same as those in the letter already quoted. The fees, however, differ.

Dear Sirs—Your letter of the 19th *instant,* addressed to Dr. Horowitz has been received and carefully noted. We observe therefrom that you are suffering from a carcinoma of the gall bladder, and we believe from the report which you have very kindly given us that you should lose no time in availing yourself of the advantages offered from the administration of "Autolysin" in malignant disease such as you have.

. . . .

We note from your letter that you can come on to New York now in the next few days, and we should be very glad to welcome you and offer you the advantages of this new method of treatment. The examination with reports of the various laboratories and consultation will be $500. The treatment at $50 per week thereafter.

Trusting this information will serve your purpose and that we may have an opportunity of giving you the advantage of this treatment, we beg to remain,

Yours very truly,
(Signed) ALEXANDER HOROWITZ, M.D.
Per: W. E. F. [W. E. FITCH (?)—ED.]

The following letter appeared in *Northwest Medicine* for September, and was said to have been written to a physician in Seattle. We again omit the second and third paragraphs, as they are the same as those already quoted. It seems that these two paragraphs are utilized in many of the letters, no matter who signs them:

NEW YORK CITY, July 29, 1915.

Dear Doctor:—Your letter of the 24th inst. duly received. We note from it that you have a patient under observation who is suffering from an inoperable malignant disease of the uterus. We believe we can conservatively say to you that "autolysin" at the present time offers the only hope for patients of this deplorable condition.

. . . .

If your patient is able to stand the trip to New York, we should be very glad to receive her for treatment and to have you accompany her, in order that we might have the patient under our personal observation and at the same time show you every courtesy in the case by personally instructing you into the technic of the administration of "autolysin." The fee for examination, consultation, etc., here would be $250. If the patient cannot stand the trip to New York and is able to pay for a consultation in Seattle, we could arrange to send a member of our staff there to see her in consultation with you, which consultation would be $250 and traveling expenses and the allowance of $200 per day for the time consumed in a trip from here to Seattle and return.

Trusting this information will serve your purpose, we beg to remain,

Yours very truly,
S. P. BEEBE, M.D.

The following correspondence indicates that a change in method of exploitation—this time through the physician—was adopted. The first letter was addressed to THE JOURNAL, and is from a physician. The Samuel M. Noyes who is mentioned is, according to a letter-head, an attorney-at-law of Wheeling, W. Va. Noyes is now, according to an autolysin circular, the "distributor."

ELLSWORTH, IOWA, Sept. 20, 1915.

To the Editor:—In the recent numbers of *Hearst's* there have appeared articles on Autolysin, used in the treatment of carcinoma. Afflicted persons are directed to write to S. M. Noyes, New York, who would put the sufferer in touch with the remedy. I wrote as a layman requesting information and received the enclosed booklet and letter.

September 17, 1915.

Dear Sir:—Replying to your letter with reference to the Autolysin treatment of cancer.

I enclose a leaflet intended for the medical profession only, that tells something of the methods and results of the new treatment. I suggest that you hand this to a local physician in whom you have confidence, and ask him to read it. If after doing so he feels that this remedy might be of value in the case to which you have reference, let him communicate with me directly and arrangements can be made to secure a supply of Autolysin. The remedy is distributed solely through legally qualified medical practitioners.

Awaiting your further communications, I am,

Yours very sincerely,
S. M. NOYES.

To a physician in Virginia Mr. Noyes wrote:

September 8, 1915.

My dear Doctor:—Replying to yours of August 29, beg to advise that in all cases it is better that the physician administering Autolysin should, if possible, attend Dr. Beebe's clinic at 25 East 70th St., New York City, but where this is impossible I will send same direct with full instructions as to its use.

The regular price being Twenty-four Dollars ($24.00) per dozen 2 c.c. Ampules and special rates made to patients who are unable to pay this price.

In the future please address me at 17 East 38th St., New York City.

Yours very truly,
S. M. NOYES.

On the other hand, patients seem to have been directly favored. Another physician writes to THE JOURNAL:

Sept. 22, 1915.

"One of my patients handed me a draft of $24.00 for 12 ampoules of the Horowitz-Beebe cancer cure. He had written to them personally and received a reply stating their price.

The foregoing are samples of the correspondence that has been forwarded to THE JOURNAL. It presumably represents the methods of promoting this unproved, secret and possibly dangerous, treatment.

VARLEX COMPOUND

An Alleged Cure for the Liquor and Tobacco Habits

"Varlex Compound," put on the market by the Varlex Manufacturing Company, Kansas City., Mo., is one of those heartless frauds sold under the claim that it can be given secretly to "cure" the liquor and tobacco habits. The term "heartless" is used advisedly. There is no preparation that can be given secretly to cure alcoholism; wives and children of inebriates reading lying advertisements of the Varlex type purchase the worthless nostrums, often with money that can be ill afforded, in the hope of releasing father or husband from the thraldom of alcoholism. The sordid wretches engaged in the business of selling these alleged cures know full well that there is not one chance in a thousand that the return of the money spent will be demanded; for, in the nature of the case, the victims are unwilling to risk the publicity that such a demand would bring.

Varlex Compound is advertised by the "prescription fakes" method. Under the heading "Home Recipe for the Liquor Habit" the claim is made that a "well-known physician located in the Middle West, who has treated thousands of cases of the liquor habit" gives the following "simple inexpensive prescription that can be given secretly in coffee, milk, water or in the food." The alleged prescription is:

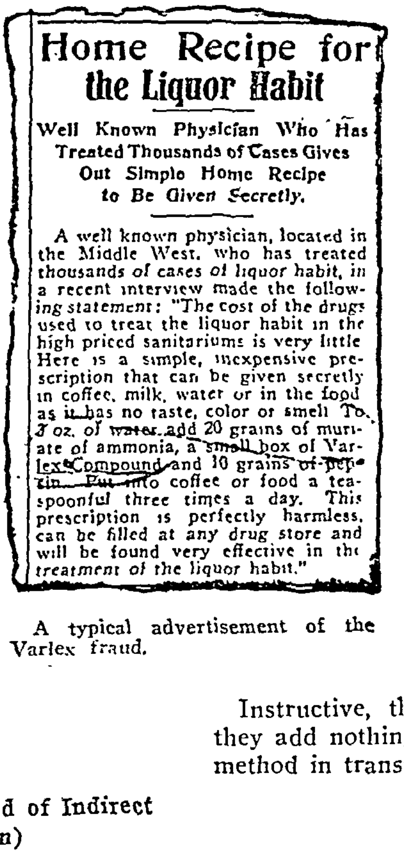
Water	3 oz.
Muriate of Ammonia	20 grains
Varlex Compound	1 pkg.
Pepsin	10 grains

A package of "Varlex Compound" was submitted to our Chemical Laboratory. Here is what the chemist reported:

CHEMIST'S REPORT

One package of "Varlex Compound for Making A Treatment For The Liquor And Tobacco Habit," prepared by Varlex Mfg. Co., Kansas City, Mo., was submitted to the Chemical Laboratory for examination. The package contained about 48 grains of a brownish-white powder, having a slightly sweet taste. Qualitative tests demonstrated the presence of milk sugar (lactose). Alkaloids and metallic substances were *not* found. Quantitative determinations indicated that the powder consisted of approximately 97 per cent. lactose and 3 per cent. moisture. In other words, it appears to be essentially milk-sugar.

The swindler who sells fake mining stock to widows and the hold-up man who makes women and girls his victims, rank higher, morally and ethically, than those who would sell worthless nostrums to unfortunate women who grasp, despairingly, at the promise that with the aid of these mixtures they can free their loved ones from the slavery of drink. Kansas City, Mo., is the home of more than one vicious and cruel medical fraud but *none is more conscienceless* than that exploited by the Varlex Manufacturing Company.



Home Recipe for the Liquor Habit

Well Known Physician Who Has Treated Thousands of Cases Gives Out Simple Home Recipe *to Be Given Secretly.*

A well known physician, located in the Middle West, who has treated *thousands of cases of liquor habit,* in a recent interview made the following statement: "The cost of the drugs used to treat the liquor habit in the high priced sanitariums is very little Here is a simple, inexpensive prescription that can be given secretly in coffee, milk, water or in the food as it has no taste, color or smell To 3 oz. of ~~water~~ add 20 grains of muriate of ammonia, a ~~small~~ box of Varlex Compound and 10 grains ~~of pepsin. Put into~~ coffee or food a teaspoonful three times a day. This prescription is perfectly harmless, can be filled at any drug store and will be found very effective in the *treatment of the liquor habit.*"

A typical advertisement of the Varlex fraud.

Correspondence

Experiences with the Sodium Citrate Method of Indirect Transfusion of Blood (Lewisohn)

To the Editor:—In a recent article on this subject by Dr. Irving Simons (The Journal, Oct. 16, 1915, p. 1339) occur some curious errors, which ought to be corrected lest they lead the profession not to estimate properly a method of transfusion which may turn out to be of great value. To those who have experience with transfusions it is evident that the accidents which occurred in two of Simons' series of three cases were not due to the use of citrate, as that author thinks, but to hemolysis or agglutination (or most probably both)—that is, to incompatibility between the blood of donor and that of patient. I know for a certainty, as a result of an experience now extending over more than 350 transfusions, that hemoglobinuria such as occurred in Simons' first case never occurs unless one of the bloods mixed is actively hemolytic toward the other. This is true irrespective of whether the transfusion is by anastomosis, syringe or citrate method. (Since publication of the recent article by Dr. Libman and myself [*Am. Jour. Med. Sc.,* 1915, cl, 36], I have performed the preliminary blood tests for twenty-five citrate transfusions in which no such accidents occurred.)

Simons states, indeed, that such a test was done before his first transfusion; but since he does not describe the technic of either test or transfusion (indeed, they were both performed by another man before Simons saw the case), and since a correct technic and interpretation of these tests require considerable laboratory experience, not too much reliance should be placed on this.

In fact, it is hard to see why Simons cites this case at all as against the citrate method since he says in his conclusion: "There is no reason to believe that hemoglobinuria may not occur with either type of transfusion [that is, direct or citrate] with equal frequency. . . . Infarction occasionally occurs (lung, kidney) and . . . hemoglobinuria is quite common and can occur even when the tests in vitro are negative." To this last statement I can only reply that hemoglobinuria and infarction are exceedingly rare and never occur when the tests in vitro (properly performed) are negative and the technic of the transfusion is correct.

In the description of Simons' other cases there is no mention of any tests at all. It is important to notice that *in the second of Simons' unhappy accidents the transfusion was the second one which the patient had undergone and was done eleven days after the first, and from the same donor*—the patient's son. Now it has been shown experimentally (Ottenberg, Kaliski and Friedman) *that it is possible to develop isohemolysins by direct transfusion from an animal of the same species.* And the time requisite for the development of these antibodies is probably the same as for the development of other antibodies, namely, from four to ten days. Corresponding with this is the striking fact that if one goes through the literature of fatal accidents after transfusion, one finds a disproportionately large number of these patients to have had second transfusions five days or more after the first and with no preliminary blood tests. I have seen one such case myself (described in the recent article with Dr. Libman). Simons' article adds another to the literature. In fact, it may be set down as an axiom that to subject a patient to a second transfusion without painstaking preliminary blood tests is to court danger. It need hardly be explained again, after all that has been written on the subject, that the mere fact that the donor is a near blood relative does not obviate the necessity for the preliminary blood test.

Instructive, therefore, as Simons' cases turn out to be, they add nothing to the question of the value of the citrate method in transfusion.

Reuben Ottenberg, M.D., New York.

To the Editor:—The results obtained by Dr. Simons with the citrate method of blood transfusion differ not only from my own but from the general experience of others. The citrate method, one of the latest of the innumerable transfusion methods, would not have acquired such great popularity in so short a time if the method had not given good results. My material comprises nearly fifty cases, and I have never had any untoward results with this method. Lately I have used the citrate method quite extensively in children (the youngest child being 20 days old), and though I have in some cases injected large quantities (for instance 350 c.c. to a child 3 years of age), I have never observed any toxic symptoms.

The records of Simons, as published in The Journal (Oct. 16, 1915, p. 1339), *seem incomplete.* It is obvious that his tests for hemolysis and agglutination are partly responsible for his results. We all know that the success of a blood transfusion depends largely on a careful execution of these tests. He does not tell us how he used the method, whether he used the proper proportion of citrate and blood, whether he had a free flow of blood from the donor's vein into the glass jar, etc.

I fail to understand why Simons was not satisfied with the result of the citrate method in his second case. He gave 500 c.c. of citrated blood, and the hemoglobin rose from 38 to 58 per cent., and had reached 75 per cent. on the following day. A reaction occurred, there being a temperature of 102, but a rise of temperature is apt to occur in a certain percentage of cases no matter what method is used (vessel anastomosis, syringe method, etc.).

The records of the first case are so incomplete that it is hardly possible to form any definite conclusion as to its clinical aspect. The patient was suffering from intestinal hemorrhages. An exploratory laparotomy was performed, but the cause of the hemorrhages was not ascertained. The patient had received a citrate transfusion and a Crile transfusion before the operation. He died a few hours after the operation; no postmortem examination was made.

Simons advocates the Crile method for blood transfusion. However, it is not clear how he would apply the vessel anastomosis in a case of acute hemorrhage. He states that he spent four hours on a Crile transfusion, and the patient would have been dead long before he succeeded in uniting the vessels. It is just in the cases of profuse hemorrhages, where the patient is pulseless from acute loss of blood and where minutes count, that the citrate method is the method of choice, as it can be performed in ten minutes.

We are indebted to Crile for having revived blood transfusion. His method, however, is practically never used now, because it has been proved that the same results can be obtained in a much more simple way by the syringe or citrate method. Any method which does not accurately indicate the amount of blood transfused cannot be considered a safe method.

I think we can definitely say that the vessel anastomosis will become more and more of historical interest.

In an editorial article on blood transfusion which appeared in the same issue (October 16, p. 1368), you state that "it would seem probable that eventually through the discovery of harmless anticoagulating methods, transfusion will become a simple procedure." The citrate method represents this desideratum. Richard Lewisohn, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the *writer's name and address*, but these will be omitted, on request.

TOXIC EFFECTS OF BARIUM

To the Editor:—1. I have been approached by a friend for information about the toxic effects of barium compounds on the human system. 2. He is to have charge of a large barium plant and wishes to be posted on any possible trouble that the workmen may experience in handling this material. I have been unable to find any reliable data on this subject. H. R. Mutchler, M.D., Greystone Park, N. J.

Answer.—1. Barium acts as a powerful direct stimulant to all forms of muscle. It produces a slowing of the heart, a strong vasoconstrictor action with a consequent rise of blood pressure, and, when taken in large doses, paralysis of the cardiac muscle. It stimulates and later paralyzes the central nervous system. It is a peristaltic stimulant and a local irritant. The symptoms following the ingestion of large doses include vomiting, diarrhea, abdominal pain and dilatation of the pupils. Death is preceded by tonic and clonic convulsions. Fatal doses may be as low as 3 to 15 grains.

2. According to Oliver, the compounds of barium have never been studied in their relation to health. It is probably sufficient to say that special precautions should be taken to prevent the workmen being exposed to fumes arising from vats and tanks, to insist on the greatest cleanliness, to allow sufficient respirators during certain operations, and to take every precaution for insuring the removal of dust and thorough and efficient ventilation. Most of the instances of barium poisoning which are recorded have arisen through error, a large dose of barium having been taken when some other preparation similar in appearance was desired. Rambousek calls attention to cases of poisoning from sulphuretted hydrogen gas in plants devoted to the manufacture of sulphuric acid, in which process barium plays a large part. There are no instances, however, of barium poisoning in this industry.

THE COMPOSITION OF ALKALOL

To the Editor:—Please publish the formula of the nose and throat wash "*Alkalol.*" *W. B. C., M.D., Philadelphia.*

To the Editor:—I should like to know the approximate composition of a remedy known as Alkalol, which is sold by an Eastern concern without the formula being given on the wrapper or the advertisement that goes with the stuff. It is advertised as useful in inflammations of the mucosa of the nose and throat. A. J. Provost, M.D., Oshkosh, Wis.

Answer.—The Chemical Laboratory of the Association, having been requested to analyze a bottle of Alkalol purchased on the open market, reports as follows:

"Alkalol was found to be a clear, light brown liquid having an aromatic odor, a saline taste and an alkaline reaction toward litmus. It yielded about 2 per cent. of solids, mainly alkali, chlorid, chlorate and bicarbonate; of this 2 per cent., about one half was bicarbonate. During evaporation of the liquid, odors resembling eucalyptus, spearmint, cinnamon and vanilla were noted, the last, in view of the manufacturers' statement as to balsamic constituents, probably indicating the presence of some substance like Siam benzoin. Small quantities of salicylic and benzoic acids were found present. Alkalol thus appears to be essentially an aromatized, weakly alkaline, saline solution, containing a small amount of chlorate, probably potassium chlorate."

From this report physicians may judge for themselves how well justified are the claims that:

> "Alkalol is more, infinitely more than a simple alkaline solution."
>
> "Alkalol is an ideal agent for gargling, spraying or irrigating the postnasal, postpharyngeal spaces and tonsils."
>
> "For enteric diseases particularly of children, Alkalol is invaluable."
>
> "Appreciation of its peculiar physiological *action* will explain why and how it is of surpassing effectiveness in all conditions where there is ulceration or perforations of the drum membrane."

TINNITUS AURIUM, *CHRONIC RHINITIS* AND ALTITUDE

To the Editor:—1. *Please inform me if there* is any distinction between head noises and tinnitus aurium.

2. What effect would a high altitude have on tinnitus aurium, or head noises, or on chronic rhinitis? H. J. F., M.D., Wisconsin.

Answer.—1. Tinnitus aurium and head noises are different terms to define the same condition. Occasionally a patient will state that he does not hear the tinnitus in the ear but in the head.

2. A high altitude usually has no permanent effect on tinnitus aurium. Sometimes the conditions increase and sometimes diminish on moving to high altitudes. Chronic rhinitis of an intumescent character is likely to be benefited by a high altitude, unless dust in the atmosphere causes irritation. In such cases the affection would be aggravated. Chronic rhinitis with scabbing of the nares is usually aggravated by a high altitude.

DEATH PROBABLY FROM PULMONARY EMBOLISM

To the Editor:—At her second confinement, March 1, Mrs. B, aged 30, always healthy, was delivered of twins — girls. It was a forceps delivery, but there was no apparent trouble. She made a splendid recovery, and had no elevation of temperature after the fourth day. On the night of April 15, about 11:30, after retiring and having probably been asleep for some time, she called her husband and exclaimed that she was dying. He found her gasping for breath, blue in the face, trying to vomit a quantity of blood, froth and mucus which was pouring from her mouth. She died almost immediately. I have asked a number of physicians concerning this case, but none of them seem to know anything about it. H. D. S., Oklahoma.

Answer.—It is somewhat difficult, even when a case is actually before one, without a postmortem examination, to suggest the cause of death in such instances. Sudden death with similar symptoms may be due to a number of different causes. In the instance here described it seems most likely that death was due to pulmonary embolism.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

Arkansas: Regular, Little Rock, November 9-10. Sec., Dr. T. J. Stout, Brinkley. Homeopathic, Little Rock, November 11. Sec., Dr. Scott C. Runnels, 900 Scott St., Little Rock.

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Foram Bldg., Sacramento.

Connecticut: Regular, New Haven, November 9-10. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven. Homeopathic, New Haven, November 9. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven. Eclectic, November 9. Sec., Dr. T. S. Hodge, 19 Main St., Torrington.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maine: Portland, November 9-10. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Massachusetts: Boston, November 9-11. Sec., Dr. Walter P. Bowers, Room 159 State House, Boston.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Nebraska: Lincoln, November 10-11. Sec., Dr. H. B. Cummins, Seward.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

South Carolina: Columbia, November 9. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.

Texas: Dallas, November 9-11. Sec., Dr. M. P. McElhannon, Belton.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

West Virginia: Elkins, November 9. Sec., Dr. S. L. Jepson, Charleston.

Medical Council of Canada

The third annual announcement of the Medical Council of Canada has been received. This council is at present made up of thirty-two members, three being appointed by the government, two by each province of Canada, one from each medical school of Canada, and three representing the homeopathic school of medicine. From this membership six standing committees have been appointed, these being, besides the executive committee, committees on education, finance, discipline, rules and regulations, and educational standards.

The members of the board do not act as examiners. Prior to each examination, certain examiners are appointed from the faculties of the various medical schools. For example, for the examination held at Montreal and Halifax, Oct. 12, 1915, thirty examiners were appointed, four each in surgery, medicine (including therapeutics), anatomy, physiology, obstetrics and gynecology, hygiene and state medicine, pathology and bacteriology, and two homeopaths. Thus the board has been empowered to secure as examiners those who are best qualified because of their teaching positions to conduct examinations in the various subjects.

At the examination held in October, 1914, eighty-six candidates presented themselves for examination and of these candidates, forty-nine (57 per cent.) passed, twenty-two (25.6 per cent.) were rejected, and fifteen (17.4 per cent.) required to take subsequent examinations in one or two subjects.

The total expenses of the board for the year ending March 31, 1915, were $13,576.45; whereas the income, which included $15,000 from a government grant, amounted to $36,871.62.

The fee for the examination, including subsequent registration, is $100. In case of failure requiring reexamination, the candidate is required to pay one half of the original fee, that is, $50.

Candidates for the examination of the council are required to present either (*a*) a license of a provincial medical council or board of examiners, or (*b*) a certificate from the registrar of a provincial medical council, or board, that the requirements of that council or board in regard to preliminary education, matriculation, medical curriculum and graduation have been complied with.

Candidates who hold diplomas outside of Canada are required to present certificates from the registrar of a provincial medical council, the same as is required of graduates of the Canadian universities.

Applications for examinations, together with the necessary certificates and fee, must be deposited with the registrar at least four weeks before the date set for the commencement of the examinations.

The qualification granted by the Medical Council of Canada is known as the "License of the Medical Council of Canada" (L. M. C. C.).

The subjects of the examination are physiology, anatomy, hygiene and public health, pathology and bacteriology, midwifery and gynecology, surgery and medicine (including therapeutics), six questions being assigned in each subject. The examination consists of a written examination in each subject in the English or French language, and also (*a*) a clinical and oral examination in medicine and surgery, and (*b*) an oral examination in physiology, anatomy, hygiene and public health, pathology and bacteriology, and midwifery and gynecology. Sixty per cent. is required to pass. A candidate who fails in not more than two subjects may present himself at a subsequent examination for the subjects in which he failed. Failure in more than two subjects necessitates reexamination in all subjects. Grades are not subject to revision. The next examination will be held simultaneously at Toronto and Winnipeg, June 13, 1916.

New York January Report

Mr. H. H. Horner, chief of the examination division of the New York State Board of Medical Examiners, reports the written examination held at Albany, Buffalo, New York and Syracuse, Jan. 26-28, 1915. The total number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 156, of whom 118 passed, including 2 osteopaths, and 38 failed, including 1 osteopath. Fifteen candidates were licensed through reciprocity. Thirteen candidates were granted reregistration licenses. The following colleges were represented:

PASSED

College	Year Grad.	Total No. Licensed
Yale University	(1910)	1
Rush Medical College	(1914)	1
Johns Hopkins University	(1904) (1911, 2) (1914)	4
University of Maryland	(1912) (1914)	2
Harvard University	(1911) (1913)	2
Tufts College Medical School	(1910) (1912)	2
University of Michigan Medical School	(1914)	1
University of Michigan, Homeo. Med. School	(1912) (1914)	2
Albany Medical College	(1910) (1911) (1913, 6) (1914, 5)	13
Columbia University, College of Physicians and Surgeons	(1912) (1913, 6) (1914, 3)	10
Cornell University	(1913, 2) (1914)	3
Fordham University	(1913, 2) (1914, 3)	5
Long Island College Hosp.	(1911) (1912) (1913, 5) (1914, 8)	15
New York Homeo. Med. Coll. and Flower Hosp.	(1914)	5
New York Med. Coll. and Hosp. for Women	(1914)	2
Syracuse University	(1913, 3) (1914, 3)	6
University and Bellevue Hospital Medical College	(1913, 2) (1914, 11) (1915)	14
University of Buffalo	(1913, 2) (1914)	3
Cleveland Homeopathic Medical College	(1903)	1
Cleveland Pulte Medical College	(1913)	1
Jefferson Medical College	(1912) (1914, 2)	3
Medico-Chirurgical College of Philadelphia	(1914)	1
University of Pennsylvania	(1910, 2) (1911, 1) (1912, 2)	5
Woman's Medical College of Pennsylvania	(1914)	1
Vanderbilt University	(1903) (1906) (1912)	3
University of Virginia	(1910) (1911)	2
McGill University	(1902) (1914)	2
University of Toronto	(1895) (1909) (1911)	3
University of Jurjey	(1907)	1
University of Edinburgh	(1902) (1910)	2

FAILED

College	Year Grad.	Total No.
Chicago College of Medicine and Surgery	(1912)	1
College of Physicians and Surgeons, Baltimore	(1913)	1
University of Maryland	(1911) (1914)	2
Harvard University	(1893) (1905) (1914)	3
Albany Medical College	(1914)	3
Columbia University, College of Phys. and Surgs.	(1913)	2
Fordham University	(1913)	3
Long Island College Hospital	(1910) (1911) (1912) (1914)	4
New York Homeo. Med. Coll. and Flower Hosp.	(1913, 2) (1914, 2)	4
Syracuse University	(1913)	1

University and Bellevue Hospital Medical College	(1914)	1
Eclectic Medical College, Cincinnati	(1914)	1
Ohio-Miami Medical College	(1911)	1
Jefferson Medical College	(1912)	1
Medico-Chirurgical College of Philadelphia	(1914)	1
University of Pennsylvania	(1907) (1912)	2
University of Vermont	(1903)	1
Queens University	(1911) (1913)	2
University of Naples	(1905) (1907)	2
University of Palermo	(1905)	1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Denver and Gross College of Medicine	(1908)	Utah
Rush Medical College	(1900)	Ohio
Indiana University	(1910) (1911)	Indiana
Johns Hopkins University	(1911)	Ohio
Baltimore Medical College	(1907)	New Jersey
Harvard University	(1912)	New Jersey
Univ. of Michigan Med. School	(1880) New Jersey; (1911)	Michigan
University of Michigan, Homeo. Med. School	(1914)	Michigan
New York Homeo. Med. Coll. and Flower Hosp.	(1913)	New Jersey
University and Bellevue Hospital Medical College	(1913)	New Jersey
Jefferson Medical College	(1906)	New Jersey
University of Pennsylvania	(1911)	New Jersey
University College of Medicine, Richmond	(1911)	Virginia

Book Notices

PRACTICAL MATERIA MEDICA AND PRESCRIPTION WRITING WITH ILLUSTRATIONS. By Oscar W. Bethea, M.D., Ph.G., F.C.S., Assistant Professor of Materia Medica, Tulane University. Cloth. Price, $4 net. Pp. 549. Philadelphia: F. A. Davis Company, 1915.

The subjects are handled chiefly from the standpoint of the practicing physician. The uses of remedies are mentioned briefly, most of the discussions being devoted to the forms in which medicines may be administered, that is, their pharmacy. According to the preface, the object of the book is to give instruction to the student concerning what preparations of a remedy, for example, iron, "will best meet the demands of particular conditions, the precautions to be observed in employing them, how to correctly prescribe them, alone or in combination, and, if in combination, with what forms or preparations of the other agents; how to order for the safest, most convenient and agreeable administration; how to use the correct names, conveniently estimate the proper quantities, the best hours for administration, and the many other matters an ignorance of which may render the physician unable to properly put to practical use his knowledge of the other departments of medical science." Medical students, physicians and pharmacists should find the book useful.

PATHOLOGICAL LYING, ACCUSATION AND SWINDLING. A Study in Forensic Psychology. By William Healy, A.B., M.D., Director, Psychopathic Institute, Juvenile Court, Chicago, and Mary Tenney Healy, B. L. Criminal Science Monograph No. 1. Cloth. Price, $2.50 net. Pp. 286. Boston: Little, Brown & Co., 1915.

The authors define pathologic lying as falsification entirely disproportionate to any discernable end in view. A liar of this type is not falsifying because he is insane, feebleminded or epileptic. His lying, too, represents a trait rather than an episode. It is an easy and a short step from this form of lying to swindling, and closely akin to these traits is that of accusation of self or of others without reasonable motive. Dr. Healy has had exceptional opportunity to become acquainted with this form of abnormal mentality. He is able to give detailed histories of nineteen cases. These cases have been carefully studied, and their peculiar features clearly set forth. Particular attention is given to the consideration of the influence of heredity, environment in early life, sex, physical condition of the patient, habits, psychic contagion, etc. A few borderline cases in which the lying is due to insanity, or is at least one manifestation of it, are considered. The prognosis in the patients under Dr. Healy's observation has been better than is generally believed to be possible. A brief outline of the treatment is given, with emphasis laid on the importance of removing harmful causes and of diverting the activities into channels in which lying will be readily detected and there will be opportunity to let off mental steam in some way easily consistent with truth-telling.

Books and articles on this subject in English are rare. This is shown by the review of the literature in the second chapter. A work on this topic in the English language, therefore, was really desirable. The book is well written and scholarly. It is broad minded, showing a knowledge not only of psychology and insanity but of general medicine as well. It shows, further, that the exceptional opportunities afforded for research in the psychopathic institute connected with the juvenile court of Chicago have been well utilized. Dr. Healy's reputation as the author of the excellent work, "The Individual Delinquent," will be further enhanced by this volume, though in it he shares the honors with his wife. The book is fittingly dedicated to Judge Merritt W. Pinckney of the juvenile court, Chicago, whose character, ability and self-sacrificing public spirit render him deserving of this tribute.

THE STARVATION TREATMENT OF DIABETES, WITH A SERIES OF GRADUATED DIETS AS USED AT THE MASSACHUSETTS GENERAL HOSPITAL. By Lewis Webb Hill, M.D., and Rena S. Eckman, Dietitian. Introduction by Richard C. Cabot, M.D. Cloth. Price, $1. Pp. 72. Boston: W. M. Leonard, 1915.

Allen's method of treatment of diabetes attained popularity with a rapidity which seems to indicate its worth as an accepted method of procedure in such cases. This little monograph contains the details of the treatment. The actual technic is not difficult to master. A series of graduated diets are offered which have proved successful in the use of the treatment at the Massachusetts General Hospital. The booklet will be found of value to the physician who wishes to undertake the treatment of a case of diabetes by this method. It is to be regretted, however, that the price of the book is out of all proportion to its evident cost of production.

THE PRINCIPLES AND PRACTICE OF OBSTETRICS. By Joseph B. DeLee, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School. Second Edition. Cloth. Price, $8 net. Pp. 1087, with 938 illustrations. Philadelphia: W. B. Saunders Company, 1915.

In this edition of this excellent work, the author has thoroughly revised the text and elaborated some of the sections. Many new illustrations and plates have been added. An apology is made for those illustrations in which rubber gloves are not shown on operator's hands, because of the difficulty of neat reproduction of such pictures. The book is marked by an excellent conservatism; for instance, in his discussion of "twilight sleep" and of the value of the Abderhalden test, the author realizes that neither the radical enthusiast nor the bitter opponents of these procedures have reached the correct points of view.

SCIENTIFIC AND APPLIED PHARMACOGNOSY. Intended for the Use of Students in Pharmacy, as a Handbook for Pharmacists and as a Reference Book for Food and Drug Analysts and Pharmacologists. By Henry Kraemer, Ph.B., Ph.M., Ph.D., Professor of Botany and Pharmacognosy, Philadelphia College of Pharmacy. Cloth. Price, $5. Pp. 867, with illustrations. Philadelphia: Published by the Author, 1915.

This contains a discussion of vegetable drugs arranged according to botanic families. It also includes a consideration of a few of the more important drugs obtained from the animal kingdom, and a key for the identification of powdered drugs and foods. A large number of interesting and instructive illustrations add to the value of the work, which is well adapted for the purpose for which it is intended. The author's "Applied and Economic Botany" is intended to be used as preparatory and supplementary to the present volume.

A TEXT-BOOK OF PATHOLOGY. By Alfred Stengel, M.D., Sc.D., Professor of Medicine, University of Pennsylvania, and Herbert Fox, M.D., Director of the Pepper Laboratory of Clinical Medicine, University of Pennsylvania. Sixth Edition. Cloth. Price, $6 net. Pp. 1045, with 468 illustrations. Philadelphia: W. B. Saunders Company, 1915.

This edition represents an extensive revision of this well-known textbook on pathology and the complete rewriting of many sections. A new section on transmissible diseases has been added, as well as on the pathology of the eye, ear and skin. The chapter on technic, of previous editions, has been omitted. The chapter on diseases of the nervous system has been much shortened. Numerous new illustrations have been added.

Medicolegal

Statute Violated by Granting Degree of Doctor of Chiropractic

(Commonwealth vs. New England College of Chiropractic, Inc. (Mass.), 108 N. E. R. 895)

The Supreme Judicial Court of Massachusetts overrules the exceptions of the defendant corporation, which was convicted of granting the degree of Doctor of Chiropractic without authority and contrary to the statute. The statute referred to provides, among other things, that, whoever, without the authority of a special act of the legislature granting the power to give degrees, offers or grants degrees as a school, college or as a private individual, shall be punished. The court says that it is not to be assumed that the statute was intended to relate only to such degrees as were in use at the time it was enacted. It is comprehensive in its terms and may include whatever properly may be described as a degree at any time. "Doctor" is used commonly to indicate skill in the general subject of medicine. Doubtless one purpose of the legislature in enacting the statute was to protect the public from the imposition and suffering which might follow the indiscriminate use of a title conveying the implication of skill to treat disease by those who have pursued no adequate course of study to qualify them. "Chiropractic" is a new word. But it is held in Commonwealth vs. Zimmerman, 108 N. E. R. 893, that one practicing it may be found to be practicing medicine. "Degree," as used in this statute, is any academic rank recognized by colleges and universities having a reputable character as institutions of learning, or any form of expression composed in whole or in part of words recognized as indicative of academic rank, alone or in combination with other words, so that there is conveyed to the ordinary mind the idea of some collegiate, university or scholastic distinction. While this definition may not include all instances, it is sufficiently accurate for the present case. When a title like "Doctor," commonly associated with unusual skill acquired by academic or professional study in schools or colleges, is conferred either separately or associated with other words, the statute is violated. The conferring of a title made up of the word "Doctor" and a word relating to the healing art may be found to be the granting of a degree within the meaning of the statute. The word "Doctor" in connection with an unusual and high-sounding word would be quite as likely to impose on the ignorant and credulous as the false use of the conventional Doctor of Medicine.

Chiropractic and the Practice of Medicine

(Commonwealth vs. Zimmerman (Mass.), 108 N. E. R. 893)

The Supreme Judicial Court of Massachusetts overrules exceptions to a conviction of the defendant of practicing medicine without having been lawfully authorized. The evidence tended to show that he had kept an office, indicated by a sign on which his name was followed by the word "chiropractor," and that he practiced for pay. The court says that the treatment pursued by the defendant was to have those who resorted to him to go into an inner room and remove their outer garments until they were stripped to the waist. The patient then took a sitting position. The defendant examined down the spine, beginning at the top, by feeling with his fingers to see whether each vertebra was in its proper position. The method to discover whether a vertebra was out of position was by making a gliding move of the three middle fingers of the right hand, which constituted the process of "palpation" whereby one vertebra was compared with another. As a result of this "analysis" the defendant was able to tell whether vertebrae were out of alignment or out of their normal positions. In making "adjustments," the patient was placed on a low table with face downward and the vertebra which was out of condition was given a quick thrust or push by the hands of the defendant. Although the defendant did not prescribe medicine, and testified that he paid no attention to the patient's description of symptoms or disease, yet it was obvious that his purpose was to treat the human body in order to make natural that which he found abnormal in the narrow field of his examination. The removal of pressure on nerves is a means of relieving the ills flowing from that source.

The plaintiff's manipulation was of a most important part of the body and related to a nerve center. It might have been found that it could have no other aim than a prevention of disease or relief from existing disarrangement of body functions. That which the defendant did and its manifest purpose might have been found to be practicing medicine within the meaning of the statute. Medicine relates to the prevention, cure and alleviation of disease, the repair of injury, or treatment of abnormal or unusual states of the body and their restoration to a healthful condition. It includes a broad field. It is not confined to the administering of medicinal substances or the use of surgical or other instruments. It comprehends a knowledge not only of the functions of the various organs of the human body, but also the diseases to which these organs are subject, and the laws of health and the modes of living which tend to avert or overcome disease as well as the specific methods of treatment that are most effective in promoting cures. In order to practice medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it, he still may be found to practice medicine. It is a matter of common knowledge that there has been great specialization in that profession in recent years.

It was of no consequence that the defendant abstained from the use of the words "diagnosis," "treatment," or "disease" in description of what he did, and employed the terms "analysis," "palpation," and "adjustment." The acts which he did and their manifest design were to be examined rather than the words used, in order to ascertain the true nature of the defendant's conduct. The circumstance that the statute exempts certain classes, such as osteopaths and pharmacists, and those practicing Christian Science, mind cure, massage and others, does not render the statute unreasonable as to the defendant nor deny to him the equal protection of the laws. One of the exemptions is of the "cosmopathic method of healing." "Cosmopathic" is defined in the Standard Dictionary as "open to the access of supernormal knowledge or emotion supposedly from a preternatural world." Without undertaking to decide what a "cosmopathic method of healing" may be, plainly it does not include the defendant's operations.

Fraud Order Upheld After the Employment of a Physician

(Hall vs. Wilcox (U. S.), 225 Fed. R. 333)

The United States Circuit Court for the Southern District of New York in denying a motion, in this old but recently reported case, for a preliminary injunction to restrain the postmaster at New York City from withholding mail from the complainant, who was selling "electric belts" which were advertised as curing or aiding many ailments and increasing and preserving the sexual powers of men, holds that the presumption was that the postmaster general was right in his conclusion on which he issued the fraud order under which the mail was withheld. Certainly the complainant, the court says, did not meet the burden of proof imposed on him by the presumption. He admitted one recent instance of business to be indefensible, and scarcely denied that such instances may have been the rule. If they were even rare, he admitted that some fraudulent quackery existed until recently. To assert that the course of business indicated by the past had been mended by the sudden employment of a licensed physician, concerning whose professional qualifications (including pecuniary independence of the complainant and the electric belt business) nothing was shown, was asking too much of credulity. The complainant's argument was based on the proposition that his misdoing must be proved to be in the present tense, to justify a fraud order. The court knows of no more persuasive evidence of present conduct than past performance.

Society Proceedings

COMING MEETINGS

Am. Assn. for Study and Prevention of Inf. Mortality, Phila., Nov. 10-12.
American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Hawaiian Medical Society, Honolulu, Nov. 6-8.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Medical Association, Dallas, Tex., Nov. 8-11.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Dec. 17-18.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

(Continued from page 1581)

Roentgen Deep Therapy

DR. ARTHUR F. HOLDING, New York: The physical methods used with the Roentgen ray, such as radium coagulation and the ultraviolet light, gave 100 per cent. of cures in the treatment of nonmalignant cases, that is, where the disease was superficial. Seventy per cent. of deep therapy cases were improved in conjunction with surgery, and 7 per cent. of the inoperable cases were improved in about 20 per cent. of the hopeless, inoperable cases.

Radium Plus Roentgen Ray in the Treatment of Superficial Lesions

DR. RUSSELL H. BOGGS, Pittsburgh: Radium applied locally supplemented by the Roentgen rays to the adjacent tissues is the ideal form of radiation, because all the malignant cells can be rayed stronger with less injury to the healthy tissues. Surgery and radium are local methods of treatment. Metastases in distant parts of the body are beyond the reach of these methods. Radium destroys the malignant cells without injuring the normal ones, but the radium rays do not reach beyond a certain depth; hence it is evident that radium should be used only in cavities, cross-firing as much as possible before inserting the tube into the growth, and raying the adjacent lymph supply as thoroughly as possible.

DISCUSSION OF THE PAPERS OF DRS. HOLDING AND BOGGS

DR. HENRY K. PANCOAST, Philadelphia: I have been interested in radium for over a year and a half, and have treated more patients with radium than with other methods. Nevertheless, I have as much confidence in Roentgen therapy as I ever had. Radium and Roentgen rays can be combined to good advantage. There are certain conditions in which radium is superior to the Roentgen ray, such as nevi. It is useless to attempt to treat with radium unless a sufficient quantity is used. This is especially true of deep lesions, and even in the case of superficial lesions it is dangerous to treat large areas with small quantities of radium. It has been said that radium reactions are not as severe as Roentgen-ray reactions. That is not true; but radium reactions disappear more rapidly and more uniformly than Roentgen-ray reactions. It has been said that radium radiation is not manifested in a desirable way beyond an average of 2.5 cm. from the source of radiation. I believe that there is such a condition as stimulation of the growths. We may give too little radium or too little Roentgen radiation, and stimulate a malignant growth to greater activity, thus also increasing the danger of the occurrence of metastases. In inoperable carcinoma of the uterus, when radium has been used, patients with few exceptions have been markedly improved. The local lesion in the cervix has in many instances disappeared. The patient has moments of comparative comfort, without discharge or bleeding, although after a year I have received reports of recurrences and metastases. Why? For the simple reason that the man who used the radium did not have in mind the fact that effects were not being obtained beyond 2 or 3 cm. distant from the Roentgen tube. That can be overcome by a combination of the Roentgen and radium therapy.

DR. H. W. DACHTLER, Toledo, Ohio: I do not know of any case of epithelioma that has been cured by radium. I know of two patients who were treated with radium because the Roentgen ray was not satisfactory. One of these patients is dead and the other would like to be. As to the difference in reaction between radium and Roentgen rays, that is easily explained. Radium is applied to the surface, and the intensity of the Roentgen ray is 1,000 times greater; hence radium reactions clear up more rapidly.

DR. GEORGE E. PFAHLER, Philadelphia: The keynote of success in this line of work is a combination of radium and the Roentgen ray, the former to be applied in cavities and the latter on the surface.

Oxygen in Cystoscopy and Pyelography

DR. AMEDEE GRANGER, New Orleans: For six years I have used oxygen. It is easily obtained, does not harm the tissues, and is a mild antiseptic and analgesic; it is well borne by the bladder, and permits of much greater distention in the case of painful and irritable bladder than is possible with either air or boric acid solution. It is easily retained and easily expressed. Calculi show with remarkable clearness. If the prostate is enlarged, the shadow is easily made out. The entire outline of the bladder is distinctly visualized, and if the walls are unyielding because of adhesions or infiltrations, these are easily seen. Growths, diverticuli and other deformities are easily recognized.

Pyelography

DR. W. F. MANGES, Philadelphia: Pyeloscopy is preliminary to pyelography. A big catheter and an opaque fluid should be used. No attempt is made to settle the actual condition of the injected pelvis, but only to determine the proper time to make the pyelogram. The procedure causes the patient no additional discomfort, and is a safeguard against overdistention. The operator need not have any fear of personal danger, because fluoroscopy today can be made perfectly safe.

DISCUSSION ON THE PAPERS OF DRS. GRANGER AND MANGES

DR. JOHN H. SELBY, Washington, D. C.: Oxygen is a very valuable aid in the study of the bladder. Using it in the kidney requires much distention of the pelvis and calices, as well as of the ureter, in order to get the proper differentiation. That is dangerous. Therefore, I prefer the fluid which is allowed to flow in by the gravity method. Fluids, especially thorium nitrate, are not as irritating as oxygen, and do not overdistend. If there is danger of overdistention, the patient should be put immediately into a hot sitz bath, the back scalded, if necessary, and then he should be given 1/75 grain of atropin. I have had to do that several times. This work is very dangerous unless it is done carefully. It is a feasible and workable method in experienced hands. I am glad that Dr. Manges has taken up fluoroscopy in kidney cases. Our English confrères are well satisfied with this method, and some of them believe they can locate a stone in 80 per cent. of the cases without making any roentgenograms at all. The question of ascending infection, however, must be considered in these cases. In a few cases in which a 10 to 12 per cent. thorium nitrate solution was used after the bladder was filled and the patient was then placed in the Trendelenburg position, we could see the solution travel up the ureters.

DR. A. W. CRANE, Kalamazoo, Mich.: I have distended the bladder with filtered air for the last ten or twelve years, and have never had any bad results or accidents. It is not necessary to use oxygen. The air is filtered by pushing cotton into a medicine dropper and pumping air through that into the catheter until the patient feels some distention in the bladder. It is not necessary to overdistend the bladder, because if it can be outlined, one can decide whether the stone, if present, is inside or outside of that viscus.

DR. WILLIAM H. STEWART, New York: I made some investigations of enlarged prostates by injecting air into the bladder. I was much impressed with the detail of the coccyx which this method gave. One cannot get it in any other way. Overdistention and direct trauma of the calices can be avoided by using Dr. Manges' method. These two points have caused most of our trouble, but this method is not dangerous, if used by the expert.

Treatment of Exophthalmic Goiter by Roentgen Therapy

Drs. J. D. Zulick and George E. Pfahler, Philadelphia: The trial of the treatment of goiter by Roentgen therapy with an interval of waiting of one month is justifiable in all cases, and if operation is decided on, nothing is lost, and many operations can be avoided. The treatment should be directed toward both the thyroid and the thymus. An increase in weight and a decrease in pulse rate are the first signs of improvement, and are practically always found. Treatment must not be prolonged over too long a period, or hypothyroidism may be produced. The goiter and the exophthalmos are the last to show improvement, and in many cases have shown no change at all.

Method of Preventing Unpleasant Symptoms Following Deep Roentgen Therapy

Dr. Sidney Lange, Cincinnati: Unpleasant constitutional symptoms following deep Roentgen therapy may be the result of an acidosis. As the administration of sodium bicarbonate by mouth prevents the occurrence of these symptoms, I now prescribe as a routine 30 grains of sodium bicarbonate every three hours for the first forty-eight hours after each treatment. When the condition of the patient warrants, the sodium is also given for twenty-four hours before treatment, to increase the alkalinity of the blood, and the patient is encouraged to drink freely of alkaline water. We also apply Dodd's alkaline lotion twice daily to the skin areas under treatment as a prophylactic measure against the development of a reaction. We have thus been able to increase the skin tolerance and deliver a greater dose to the underlying tissues than would otherwise be possible.

Cause and Prevention of Constitutional Symptoms Associated with Deep Roentgen Therapy

Dr. George E. Pfahler, Philadelphia: The gases produced by the action of the high tension current on the air are an important factor in the production of these symptoms. We may possibly add the ionization effects of the rays. The highly sensitive and neurotic type of patient is more liable to develop these symptoms than the more sluggish and phlegmatic patient. The rational line of treatment is to eliminate the gases and to provide fresh air. The former may be accomplished by preventing leakage of the current by careful insulation, and the latter by giving the treatment in a large, well-ventilated room, and by the instillation of a fan which will carry the gases away from the patient. To supply fresh air and oxygen directly to the patient, I use a breathing mask placed over the nose and mouth. It is made of celluloid with a rubber cap similar to the mask that is used in connection with a nitrous oxid-ether apparatus. We also divide each series of treatment, giving part of the treatment on two or three successive days.

Roentgen Therapy of Menorrhagia, Dysmenorrhea and Uterine Myomas

Dr. Sidney Lange, Cincinnati: In fifty consecutive cases a satisfactory result was obtained by Roentgen treatment, and artificial menopause, apparently permanent, was established in every case in which it was desired, regardless of the age of the patient. Malignancy has not developed in any case, either during or following treatment, nor has there been a recurrence of menstruation, although in several cases there has been an occasional faint show during the few months just following the treatment. After the lapse of a few months, however, abatement of the ovarian function has been complete and permanent. It is a most satisfactory form of treatment, as it does not harm, causes no discomfort or pain, and is good in its results.

DISCUSSION ON THE PAPERS OF DRS. LANGE, ZULICK AND PFAHLER

Dr. Frederick H. Baetjer, Baltimore: I have been very much interested in deep therapy of the thymus. In all our cases we have made examinations of the chest to see whether there was any compression of the trachea or a substernal thyroid. After operation on the thyroid a certain percentage of the patients did not get well. The question is, Does the thymus play any rôle in these cases? We cannot demonstrate the thymus roentgenographically in every case, because its edges may be as thin as tissue paper, and hence throw little or no shadow. We have often seen the edges of the gland extending out beyond the sternum. We have started to treat all thyroid cases first by raying the thymus, protecting the thyroid as much as we could. In many ways the results have been satisfactory, and in some cases they have been disappointing. We always give this treatment first, however, and if there is no improvement an operation is performed. The difficulty in treating the thyroid with the Roentgen ray is that we cannot tell how much of the gland is being destroyed, and we must remember that a certain amount of gland tissue must be preserved for function. The surgeon is better able to approximate that when the gland is exposed to view.

Dr. Rollo H. Stevens, Detroit: To prevent constitutional symptoms, I use an electric fan, blowing directly on the patient, and I give the treatment in two sittings. I treat the patient from the side, and that position, together with covering the patient's mouth with a towel, seems to help them very much.

Dr. George E. Pfahler, Philadelphia: A prominent physiologist told me that the enlargement of the thyroid stimulates the enlargement of the thymus, and vice versa, and he suggested that the exophthalmic patient may have an enlargement of the thymus as the result of shock, nervous strain, or some condition which favors enlargement of the gland, but that the enlargement of the thymus might be responsible wholly for the thyroid enlargement.

Dr. Sidney Lange, Cincinnati: I treated a woman who had a sarcoma of the upper jaw, exophthalmos and blindness in each eye, with, in addition, occlusion of the nares. Deep therapy gave splendid results, the exophthalmos disappeared, the nares opened up, and the foul odor of the discharge stopped. A patient with lymphosarcoma of the neck made a symptomatic recovery. The patient, a railroad engineer, is still at his work. There has been complete disappearance of the tumor. Another patient with mediastinal sarcoma presented marked circulatory pressure symptoms. He also has made a symptomatic recovery, being entirely free from all pressure symptoms. *(To be continued)*

DELAWARE STATE MEDICAL SOCIETY

Annual Meeting, held in Wilmington, Oct. 11-12, 1915

The President, Dr. Henry W. Briggs, Wilmington, in the Chair

Anthrax

Dr. John Palmer, Jr., Wilmington: I have in the last eight years attended over forty-two cases of anthrax affecting the cutaneous and cellular tissues. The part is thoroughly but gently washed with 1:2,000 mercuric chlorid solution, dried well, then swabbed with 10 per cent. tincture of iodin and some alkali applied. This is repeated daily for several days until the slough has come away. It takes about two or three weeks for an ulcer to heal, which it does with very little scar as compared with the tissues involved. No systemic treatment is necessary other than cleaning out the bowels, though some require strychnin and alcoholic stimulants. If the trachea becomes much involved, nothing will prevent death by suffocation. It has been my experience that if the vesicles are kept unruptured it is better for the patient. The fatal cases I have seen were those in which the vesicles had been ruptured.

DISCUSSION

Dr. Joseph P. Wales, Wilmington: It is important to let the vesicle alone. When the blood vessels and lymphatics are opened, a worse infection in the tissues around the vesicle will ensue.

Dr. Joseph W. Bastian, Wilmington: I had a slight experience with anthrax and realize that the diagnosis will mislead the majority of us if we are not on our guard. The pimple is innocent looking, and as it develops, the surrounding tissue is slightly lighter in color than the healthy tissue.

In Wilmington, where we have a great number of Morocco factories, there is much more anthrax than is found in many other parts of the country, and it is a condition which is fatal so often that it is exceedingly important in two particulars: if it is not meddled with too much, the patient is liable to recover, and, if it is meddled with, the infection is going to spread, and may possibly reach other persons.

Uterine Fibroids

DR. HENRY J. STUBBS, Wilmington: These growths are the most common of all uterine tumors, and usually develop during menstrual life. They are prone to secondary degenerations and to septic infection. The latter condition may be brought about by the improper use of the uterine sound, by an injury or by extension from neighboring structures. These tumors not infrequently undergo malignant change, and for this reason alone should be removed early. The usual symptoms are hemorrhage, pressure and traction, constipation, rectal and vesical tenesmus, and frequent urination or retention of urine. In thirty-three patients operated on I have had five deaths. One successful case had had an exploratory operation in a large hospital and had been pronounced inoperable.

DISCUSSION

DR. S. C. RUMFORD, Wilmington: In making examinations for other conditions we frequently find fibroids. The ones, aside from those that are large and produce pressure, that generally call the patient's attention to the condition and cause her to consult us are the submucous variety with hemorrhage. We should bear in mind the possibility of malignancy. All fibroids should be removed. Fibroids producing pressure of any sort should be removed because they are likely to be infected by a bruise or blow on the abdomen, or by a fall, which may interfere with the blood supply sufficiently to cause an infection. A very unfortunate condition following operation is embolism. This happened to me in two cases; the patient got up perfectly well and died suddenly.

DR. GEORGE I. MCKELWAY, Dover: Fibroids of any size should be removed. They are liable to degenerative changes. The mere fact that these changes may not be fatal does not influence the fact that they do impair the general health and sometimes the mental health.

Unusual Case of Renal Calculi

DR. JAMES A. DRAPER, Wilmington: The patient, a man of 38, stated that ever since he could remember he had been subject to attacks of severe pain in the left loin extending to the bladder, during which the left side of the abdomen would swell and only a small amount of urine would be passed. The attacks would last from a few hours to a day and terminate by the passing of a large quantity of very thick offensive urine. At 11 years of age litholapaxy was done for stone in the bladder. This gave only temporary relief. When seen a year ago he was weak, pale and emaciated with a senile appearance. A roentgenogram revealed stone of the kidney. Operation was done and several calculi found aggregating in weight 1 pound 2½ drams. The patient died of kidney failure three weeks later.

DISCUSSION

DR. WILLIAM WERTENBAKER, Wilmington: The differential diagnosis between renal calculi, cholelithiasis and appendicitis is frequently not made. At times it is impossible. I recall a case in which I made a diagnosis of either gallstones or kidney stone. During an attack the doctor called in diagnosed the condition as suppurative appendicitis, and a surgeon verified the diagnosis. The patient fell into my hands some years afterward. She continued to have pain on the right side, radiating up to the right shoulder blade, with nausea and vomiting. In the meantime she developed strangulated hernia at the seat of the old incision. She was again rushed off to a surgeon, who afterward told me that he had palpated the gallbladder and could not find stones. After her return from the hospital she developed cystitis, and by that time I could feel a distinct mass in her right loin. On operation there was found a large pus cavity in the central part of which there was a renal stone. It is my opinion that that stone had existed from the very beginning.

DR. H. A. CLEAVER, Wilmington: This collection of stones was one of the greatest known. At the time when I first saw the plate I could hardly believe my eyes. It seemed to me incredible. In kidney calculus, clinical diagnosis is not sufficient. The history and urinalysis are important; but in any case with suspicious symptoms around the kidney, diagnosis is likely to be in doubt until the roentgenologist has made a careful examination.

Some Points in the Treatment of Fractures

DR. HAROLD L. SPRINGER, Wilmington: A roentgenogram should be made by an experienced man in all cases, whether one is sure of the diagnosis or not. This will serve as a protection for the physician, as well as give the patient the benefit of any doubt that might exist as to the correct diagnosis. It will also be of value in case of any legal complications. An anesthetic should be used without hesitation in securing perfect reduction. Fractures do not require emergency treatment. The soft parts should be given the first attention and allowed to become normal even if it takes several weeks. This will avoid those disastrous complications which require open operation to correct. Open operations should be used only in those cases in which conservative treatment has been tried and failed, with the exception of fractures of the patella, olecranon and capitellum, which should always be treated by the open method. Too absolute fixation of fractures of the shaft of the long bones should be avoided, and rigid immobility in fractures about joints should be secured. All movement in the latter should be postponed until the end of the fourth or fifth week. Disastrous results can be avoided only by the careful treatment of all fractures, particularly in the use of common sense in their dressing; and too much emphasis cannot be laid on the necessity for frequent and repeated inspections of the part to ascertain if it has been perfectly reduced and is remaining in good position, as well as to see that there is no undue pressure on the soft parts causing interference with the circulation.

DISCUSSION

DR. H. A. CLEAVER, Wilmington: It is astonishing what mistakes can be made with a condition apparently so simple as a fracture. An injury to the hip joint or shoulder joint should absolutely not be diagnosed without a roentgenogram.

DR. WILLIAM L. RODMAN, Philadelphia: No one at this time is justified in treating a fracture, particularly about the joints, the elbow joint more than any other, without an accurate diagnosis having been made by means of the Roentgen ray. Lawsuits are very apt to follow fractures that are treated, and for moral reasons we want every support possible. In addition to the valuable aid given by the Roentgen ray, one is putting oneself in a position in which one cannot be criticized if one has called to one's aid so valuable an agent as the Roentgen ray. An anesthetic should be used in practically all cases, particularly in the case of a fracture in a child. It is almost impossible to make an accurate diagnosis without an anesthetic, and it is almost impossible to secure an accurate coaptation of the fragments. Here is where not only the practitioner but also the surgeon fails to do his full duty by the patient. In our efforts to secure absolute immobility of the fragments we sometimes are responsible for ununited fracture. Particularly is that the case in the humerus and femur and in bones in which we know that nonunion or delayed union so frequently occurs. In other words, a certain amount of motion at the seat of fracture is not undesirable in some instances.

Military Preparedness in Relation to the Medical Man

MAJOR LA GARDE, Washington, D. C.: There is a responsibility that the civilian practitioner does not always take to himself when it comes to the condition of war. In the Spanish-American War we were a drop in the bucket as it were in numbers compared to the practitioners of medicine who came into the military establishment. There were six civilian practitioners for every one of the army's four. In the Civil War it was far greater. When it comes to a question of medicomilitary preparedness, your responsibility is just that much greater than ours, and you must take it home and consider it for all sorts of patriotic reasons. In the countries of France and England and Germany and Russia today every doctor is in one way or another connected with the military establishment. We in the regular army attempt to hold the framework of what you have got to work with in time of war. We keep it going as well as we can. When war comes we have got to have assistance, and we must have assistance that has been prepared and that has been trained, because, if we get people who do not know anything about the subject of camp sanitation, hygiene, administration and all the work that is necessary on the line of communication with an army, the help that we get is worse than useless. So we want an auxiliary staff we can put our hands on and whom we have work for. We have a national guard organization, but they are not sufficient. The general staff desires that there shall be at least six doctors for every thousand strength. We have reason to believe that we shall get that without any trouble from Congress. Congress for various reasons that I will not go into now is very liberal toward the medical department. The achievements of the medical department are world wide. Now what we want from the medical profession outside is assistance so that what we call the Medical Reserve Corps of the Army will be composed of more than average men from civilian life. Now if you will give us licentiates from the National Board of Examiners, which has been proposed, I am sure that I can vouch that after we have trained these men in the summer camps and after we have trained them through the correspondence school, there shall be no breakdown in the medical department of the army.

COLORADO STATE MEDICAL SOCIETY

Forty-Fifth Annual Meeting, held at Denver, Oct. 5-7, 1915

(Concluded from page 1582)

Peripheral Facial Paralysis: Treatment of the Refrigeration Type

Dr. George A. Moleen, Denver: When cases are seen early, within from sixty to seventy-two hours, a cantharidal vesication over the mastoid seems to cause a prompt improvement in proportion to the earliness of application, and a calomel purge, preferably in divided doses. The use of salicylates is advisable and seems to do good, rather in view of the stimulating hepatic influence than of their antirheumatic effects. The eye should be guarded through the use of a shield, and bathed and bandaged to keep the lid closed, especially at night. After from two to four days, strychnin increased with moderate rapidity to $\frac{1}{24}$ or $\frac{1}{20}$ grain should be given, and at the same time gentle massage with the aim to exercise passively the muscles; it is well to advise that voluntary attempts should be made to move the face muscles at the same time. The electric stimulation should be instituted at frequent intervals and for brief periods when the massage is begun. If no faradic contractions can be obtained, the galvanic current should be used. Just sufficient current to accomplish distinct motion is advisable, and if the anode causes a contraction with a *less* current strength than the cathode, this should be employed. The faradic current should replace the galvanic as soon as contractions may be obtained, unless a current strength is required, which is painful. Electricity has not the slightest curative value, and is used simply to obtain the mechanical *stimulation* caused by the movement of the paralyzed muscles in order to maintain their nutrition and to avoid atrophy as far as possible. In the more advanced cases, painting the mastoid with caustic solution of iodin, or the internal administration of potassium iodid, or both may be tried. Massage and electrically induced exercise of the muscles, together with strychnin, may be used advantageously. Persistent and patient use of these measures will often be rewarded by marked improvement, for even when the muscles have long since lost their electric contractibility, one must not despair, for electric response has reappeared after having been lost for a year. Recoveries of considerable movement have been observed in cases of even longer standing.

DISCUSSION

Dr. Howell T. Pershing, Denver: My experience has been very much the same as Dr. Moleen's, and I take the same view of the etiology which he has emphasized, namely, persons who suffer from Bell's palsy generally do so because the facial or fallopian canal through which the nerve travels is long, crooked and narrow, and if it is constricted the least bit more than it is in normal individuals, then the nerve has no room for swelling. Then, if the patient is exposed to cold on one side, such as might ordinarily cause rheumatic symptoms of stiff neck and a little pain about the ear, this nerve may swell. As there is no room for it to swell, pressure is immediately exercised, and the nerve fibers will not withstand the pressure and paralysis ensues. Hereditary cases can be explained from the fact that there is the anomaly of undue narrowness of this canal in the family. For instance, I have had four cases of Bell's palsy in one family. The father had two attacks of facial paralysis on the same side; his son had an attack of facial paralysis, and his daughter had a similar attack. I had the opportunity of treating them in all four attacks. As to treatment, if I get the case early, I put a blister behind the mastoid and give the salicylates on the theory that if it is not rheumatism it is something like rheumatism, and the salicylates are good in almost anything that resembles rheumatism. I myself believe these cases are rheumatic and probably infectious, and exposure to cold lowers the resistance and allows the infection to get a start. At any rate, I approve of the treatment which was recommended by Dr. Moleen.

Dr. G. A. Stoddard, Pueblo: It would seem almost presumptuous on my part to take issue with Dr. Pershing in cases of this kind; but I do not think the cause of the trouble is swelling of the nerve itself, but the lining of the cavity through which the nerve passes. It surprises me to hear Dr. Pershing speak of rheumatism as being anything but an infection.

Dr. James A. Patterson, Colorado Springs: I should like to put on record a series of cases in one family. The mother had one or two attacks of Bell's palsy. Her daughter had one attack, and the son had three attacks. The last attack was very persistent, but there was complete recovery. These patients are prone to have more than one attack. I have seen more than one attack in the same patient.

Heat in the Control of Inoperable Cancer

Dr. C. E. Tennant, Denver: Modern investigation seems to prove conclusively that heat is one of the most effective therapeutic means we have in the control of cancer, provided it is properly applied. The subsequent use of the Roentgen ray with crossfire applications of the rays from a hard tube is no doubt good after-treatment. The source of the heat may be varied from that of hot water to the actual cautery, but it must be constant, long continued, and free from insulation in order to spread evenly a temperature of from 120 to 150 F. throughout the mass. In applying the treatment to carcinoma of the pelvis or other easily accessible structures, the Percy cautery irons are probably most satisfactory. The Percy method is proving very satisfactory in inoperable cancers of the lip, face, neck and breast, and I believe it worthy of use as a preliminary treatment in borderline cases of this class, as well as pelvic lesions. This should be followed later by radical excision, thereby doing away with the possible metastatic recurrence.

DISCUSSION

Dr. W. A. Kickland, Fort Collins: There is a difference in the vitality of the cells of a new growth from the cells of normal tissue. This makes it possible to use any one of a number of agents to destroy the cancer cells. Arsenic, zinc chlorid, the Roentgen ray, radium, *heat, etc.*, are not selective in their action in the strict sense of the term, but destroy every living cell which comes under their influence, the weaker ones first, and finally the normal cells. Just how many degrees of heat there are between that which will cause the death of the abnormal cell and that of a normal one is perhaps still a question. Dr. Percy says that a cancer cell dies at 113 F., while a normal cell lives at 131 F. We know that in the application of heat to the lower forms of life, protoplasmic activity is increased up to 116 F., that at 120 all activity stops, and that the protoplasm will not recover if heated to 125. As a preliminary treatment in some inoperable cases, the application of heat may make some cases operable; but as a means of obtaining a permanent cure, it has not more selection in its action than has a scalpel in the hands of a competent surgeon.

Dr. William M. Spitzer, Denver: I believe that in the course of time heat will prove very effective in the treatment of not only inoperable but of operable cancer. Cancer of the bladder grows without deep infiltration for a long time. Until this time arrives, when it infiltrates the muscular and the peritoneal coats, we can treat it very successfully with heat. In 25 per cent. of the cases of cancer of the bladder we have heretofore failed to reach any result except death. In the last five or six years we have been able to apply heat to these cancers intravesically with excellent results.

Dr. Casper F. Hegner, Denver: The resistance of the normal cell depends not entirely on its inherent vitality, but in a large measure on the arterial circulation. Malignant cells may be extremely vascular, but the vascularity depends almost entirely on the venous content. A low grade heat, if applied at a temperature not exceeding 140, will affect actively the circulating blood. If it goes beyond that it causes more or less destruction of the vessel wall and coagulation. If the temperature is kept below that, it will kill nearly all cells having the power of arterial circulation, and a large venous content, and the normal cells having healthy circulation will not be affected. That is a more rational explanation of the efficacy of low grade temperatures in the treatment of malignant growths.

Further Experience in the Use of the Wire Tourniquet in Thyroidectomy

Dr. Leonard Freeman, Denver: Several years ago I reported a new, simple and safe method for the performance of partial thyroidectomy by means of the wire tourniquet. Since then I have had occasion to employ the procedure fifty-four times in forty-one cases, and have modified and perfected the technic considerably, so that I now feel justified in declaring that the method is a useful addition to the operative procedures in connection with goiter. The advantages of the wire tourniquet are several: It is easily and rapidly applied, requiring no particular skill in its adjustment and saving considerable time. It effectually controls all hemorrhage, thus obviating the necessity for crowding the field with hemostatic forceps. It does away with danger to either the recurrent laryngeal nerves or the parathyroid bodies, because it is employed at a safe distance from them, and even if they should by any chance be caught, the pressure is not great enough to injure them permanently. It compresses the goiter without crushing it, which is of importance in exophthalmic goiter at least. Lastly, the loops pass through the tissues and prevent the wires from slipping during the course of the resection irrespective of the size of the remaining stump. Neither clamp forceps nor a ligature of any kind answers the same purpose, nor can they be used, except in special cases. Forceps crush the tissues objectionably if they are applied tightly enough to prevent slipping when the lobe is cut away. Sutures are usually placed with much difficulty, and if tight enough to be efficient are apt to cut through, especially if the tissues are soft and vascular. Both forceps and ligatures may crush the nerves or the parathyroids.

DISCUSSION

Dr. Charles B. Lyman, Denver: I have seen Dr. Freeman use this method in many cases, and it is extremely satisfactory. There are types of large goiters that are not easily delivered in which it might be objectionable, and when the technic is applied close to the base may produce a sufficient amount of tugging on the trachea to interfere with proper respiration. I prefer to control hemorrhage with hemostats, using small ones, which are not in the way.

Dr. Charles A. Powers, Denver: One might perhaps question whether in this day the ligation of important tissues *en masse* is a procedure based on entirely sound surgical principles. I have been thinking that as time goes by Dr. Freeman will resort to the painstaking ligation of the individual vessels.

Dr. William B. Craig, Denver: I dislike to disagree with Dr. Powers. This is a recognized operation, and outside of enucleation of the tumor we have the operation of resection, one that can be done the speediest, and with the least loss of blood. It is the operation of choice. I have done more resections than enucleations or extirpations.

Dr. A. S. Taussig, Denver: The average man in doing much goiter work can use this method quite safely. It seems to me, many practitioners could use it who would not undertake it in another way.

Dr. Frost C. Buchtel, Denver: In the ordinary case of goiter, hemorrhage is not serious. In a large intratracheal goiter, particularly if one has associated with the goiter a small subretrotracheal lobe, hemorrhage is very serious. In a small goiter that is easily dislocated, I think the wire tourniquet would be eminently satisfactory. In these cases almost every form of hemostasis is satisfactory.

Etiology, Pathology and Therapy of Hodgkin's Disease and Allied Affections

Dr. J. L. Yates, Milwaukee, Wis.: In Hodgkin's disease there are four quite distinct types of lesion or stages in the development, from the earliest to the latest, or possibly from the most acute to the most chronic. The first has been reproduced experimentally. The other three are well established. Atypical lesions are remarkably numerous, and since apparently they may develop as the result of favorable therapy, it is fair to assume that they may be the result in part of variations in virulence and resistance. Since Bunting obtained the *B. hodgkini* in February, 1912, he has been able to cultivate it from all fresh affected tissue wherein the histologic diagnosis was positive or when the blood picture of the patient was characteristic unless that tissue had been contaminated or had been recently actively treated by the Roentgen ray. He has recovered it in pure culture five times from one individual at various intervals extending over three and a half years, three times from another, and twice from two others. Recently one of our earliest patients from whom a mass of cervical glands had been removed eight years previously suffered a relapse, and the organism was obtained from a recent axillary enlargement. The inoculation of dogs with small doses over many months has produced the chronic changes in the germinal centers in lymph glands and in the spleen identical with those occurring in Hodgkin's disease and Banti's disease, respectively. Moreover, these experimental animals and one normal man who was given a polyvalent vaccine prepared from similar organisms all developed the characteristic blood changes, the man reverting to normal after the vaccination was discontinued.

A study of our experiences and a review of the literature have indicated that certain more or less generally accepted therapeutic measures are harmful or futile. Arsenic is of benefit solely as a tonic. The administration of salvarsan is of no lasting if any benefit. Roentgen therapy must be given as an adjunct, since no cure due to this agency alone is on record. Aside from burns, the progress of the disease may be affected unfavorably by ill-advised roentgenologic treatments. Partial excisions are as indefensible as in cancer therapy, and this applies equally to the removal of test glands. A probable diagnosis can be obtained from the clinical history, the blood picture, the reaction to tuberculin and physical examination. If radical treatment be indicated, a primary excision with frozen section diagnosis may immediately precede it. Otherwise there is nothing to be gained for the patient but a probably certain diagnosis at the risk of a grave dissemination of the process. The only justification for routine test gland excision, the preparation of an autogenous vaccine, has been eliminated from our work.

MINNESOTA STATE MEDICAL ASSOCIATION

Forty-Seventh Annual Meeting, held at Rochester, September 30 and October 1, 1915

The President, Dr. J. T. Rogers, St. Paul, in the Chair

Radium in Dermatology

Dr. S. E. Sweitzer, Minneapolis: Radium has a definite value in the treatment of certain skin conditions. It is easily controlled and of accurate dosage. Its application is unattended by pain and is very pleasing to the patients, especially the young and the very old. The cosmetic results are excellent.

DISCUSSION

Dr. G. P. Crume, Minneapolis: The rays from the salts of radium or radioactive substances are very like those from the Roentgen-ray tube. Whether or not the emanations are identical in substance is not known, but their effect on normal and diseased tissues appears to be the same. The reactions are certainly very similar. Each one possesses some advantages, due chiefly to the form in which used. For example, radium lends itself especially to use in the cavities of the body, as the mouth, rectum and vagina, or may be placed in a capillary tube and inserted into a tumor with the hypodermic needle. The chief objection is that there is only a very limited quantity available, and the applicators are small, making it very tedious to radiate a large area.

Dr. G. B. New, Rochester: In treating large cavernous angiomas frequently seen in children, a large tube inserted directly into the tumor through a small incision, and left in for a longer time than the ordinary exposure, will give much better results. In large cavernous angiomas, the result is better if we make a small slit in the tumor and insert a large radium tube in the mass instead of using superficial packs outside.

Dr. R. E. Farr, Minneapolis: Some years ago under the use of the Roentgen ray in this class of cases I succeeded in obtaining a clinical cure in a number of instances, but later become dissatisfied with that treatment on account of failures. In those cases in which surgery does not hold out very hopeful success, radium can be tried.

Dr. J. W. Little, Minneapolis: When a tracheotomy tube is worn for a long time, we find that the granulations are not only around the tube but also in the trachea itself; and when the tube is removed, these granulations will fill up the trachea and cause difficult breathing. The tube has to be reinserted. Radium can be used here to get rid of these granulations and also the superficial ones, by being applied externally.

Dr. E. H. Beckman, Rochester: There is no question that epithelioma in the early stages is an absolutely local disease, and as such can be cured in a great many cases with radium and with the Roentgen ray. Very often in growths about the eye or on the cheek, a great deal better cosmetic results can be obtained with radium than with excision. But it must be remembered that we know very little about the penetrating power of the Roentgen ray and radium, and that when a malignant growth is situated in such a position that the adjacent lymph glands are subject to early involvement, while the primary growth may have entirely healed and may stay healed permanently, metastases may occur in the adjacent lymphatics, and for that reason I believe that a great many cases that are being treated at the present time with radium are hardly cases to be treated in that way.

Dr. H. G. Irvine, Minneapolis: Working with radium in dermatology, it should be taken for granted that the cases treated are selected cases, and the experienced dermatologist will not attempt to treat such cases with radium except when patients refuse to undergo operation. After excision, either the Roentgen ray or radium should be used. It is not possible in some locations to be sure that the entire tumor is removed. It is possible after excision that the Roentgen ray or the rays of radium will have a selective action on cancer tissue; exposure of the part to the rays will make one more reasonably sure that any remnants of cancer cells are destroyed. I think it is recognized in such a case as cancer of the lower lip that the best treatment would be first excision, followed by the use of radium or the Roentgen ray.

Syphilis

Dr. N. L. Linneman and **Dr. E. L. Tuohy**, Duluth: Our study was an attempt at a classification of 387 cases of syphilis. In the primary group there are 18 cases. Four were on the lip (3 on the lower and 1 on the upper); 1 on the right leg, above the knee; 2 at the meatus; 10 at the glans penis, and 1 on the tonsil. In the secondary cases, primary lesion in 5 was extragenital (2 being on the finger, 2 on the lip, and 1 under the scrotum). A mixed infection complicated 3 of the primaries, causing ulceration. There were 61 cases of secondary syphilis; 25 were macular, 13 were maculopapular, 19 papulopustular, and 1 ulcerative or malignant. These came under observation from one to twelve weeks after the onset. Ages varied from 2 to 61. A boy of 2 acquired the disease by being kissed by an aunt who had mucous patches in the mouth. Fifty of these cases occurred under the age of 30. The character and extent of the eruption had little to do with the constitutional disturbance. In the group of cases known to have syphilis, or in which there was parental or conjugal syphilis, there were forty-nine cases. Forty-one consulted us to find out whether they were still in need of treatment, and eight came because husband or wife had been infected, and it was desirous to know whether they had also contracted the disease. All gave positive Wassermanns and were treated. As far as could be ascertained, the disease had been contracted from six months to fifteen years previously. Fourteen of this group came because they were contemplating marriage and wished to know their condition. In most of these cases, the patient felt quite well, but in several, despite the absence of active complaint, evidences of syphilis, such as ulceration of the nose or tender points on the tibia, could be elicited.

In the cutaneous group, there were 40 cases. Mucous patches in the mouth and throat occurred in 3 cases. A great variety of ulcers were encountered: 5 on the leg; 1 on the right arm; 1 on the back of the neck; 5 on the tonsils; 1 on the tongue; 1 on the gum (about the back teeth), and in 1, a very large ulcer on the abdomen, below the umbilicus. One had ulcers about the rectum; 2 had large serpiginous ulcers back of the shoulders and neck; 4 had eczemalike, scaly patches in the palms of the hands; 1 had a rash like psoriasis quite generally over the body; 2 had gumma of the nose; 1, gumma of the upper lip; 1, gumma of the roof of the mouth, and 1, gumma of the left cheek. One had a large broken-down ulcerating gumma of the scalp; 1 had condylomata lata around the vagina and rectum; 6 had a scaly condition, notably on the cheek, tending to cover considerable areas of the body, and 1 patient had pemphiguslike blebs. In this cutaneous group were 7 congenital cases, the ages being from 1 month to 6 years. Ten of this group of acquired syphilis gave no history of the disease, and had no treatment. The others had had short courses of treatment.

In the nervous group there were 31 cases, 4 cases of cerebrospinal syphilis and 27 cases of tabes. Three of the 4 cases of cerebrospinal syphilis were advanced cases, and all 3 had more or less hemiplegia. The other case was an early case. The early case responded to treatment very readily. In one of the advanced cases, which was of five years' standing, the patient gradually grew worse, and finally died. Of the other 2 patients, 1 of them showed some improvement, especially so far as pain was concerned, and also gained considerable in weight, the general condition being improved very much. The other patient was under observation for four months, and thought he was hopeless because he did not improve more rapidly; consequently he quit treatment. Of the 27 cases of tabes, 11 cases were in the stage of ataxia, and had considerable impairment of motion. These cases had nervous symptoms from four to twenty years. Seven of these patients admitted having had syphilis, and had more or less treatment. The other 4 patients gave no history of syphilis. Five of these patients gave positive Wassermanns, and 3 of the negative Wassermanns gave positive cerebrospinal fluid. Eight of these patients showed more or less improvement, especially so far as pain was concerned. One patient showed very marked improvement, especially so far as motion was concerned. Three patients did not improve any at all as far as I could see. In the other 16 cases, there was little or no impairment of motion, and most of the patients consulted us on account of the pain, usually in the region of the legs. Three of the last group had optic atrophy of the primary type, and the eye symptoms were the primary manifestations of the disease.

DISCUSSION

Dr. G. B. Eusterman, Rochester: We are inclined to believe that syphilis predominates in the populous centers. This is true in the main, and it is especially borne out by the fact that in one general hospital in New York over 60 per cent. of the patients registering there showed a positive Wassermann reaction. In our rural centers, also, we are surprised at the frequency of syphilis as the cause of the syndrome. While the Wassermann reaction has been one of the most valuable contributions to medicine, it has its limitations. Repeated positive Wassermann reactions, particularly when they become strong, are definite corroborative evidence of syphilis. This, in addition to other evidences of syphilis, makes it conclusive.

Dr. C. R. Ball, St. Paul: In reading up the treatment of syphilis, one of the things which struck me forcibly was this: After reading a long discussion of whether the patients thoroughly treated were any more liable to late nervous syphilis than those who had never received any treatment at all, I found that statistics are quoted on both sides and the conclusion of the men who took part in the discussion, men who had reviewed the literature, and were competent in every way, was that it was about even.

Dr. G. J. Thomas, Rochester: If we are able to cure syphilis, say in ten or fifteen years, we are going to have compiled a large number of treated cases and the results of treatment and the kind of treatment used; and when men treating syphilis will do as Drs. Linneman and Tuohy have done, compile statistics or keep good records, at the same time, we shall have arrived at a certain system of treating this disease. We all know, there are many different ways, different combinations of salvarsan, neosalvarsan, mercury and the iodids, and practitioners seem to obtain the same results; but we must and will go a long way toward getting satisfactory results if we will compile our statistics and keep good records. This paper also emphasizes the point that syphilis is not a venereal or skin disease, but a general disease, and the quicker we realize that, the quicker shall we be able to cure it.

Medical Treatment of Diabetics Preparatory to Surgical Treatment

Dr. David M. Berkman, Rochester: Twenty-six patients suffering from glucosuria have been operated on in the Mayo Clinic during the past year. Two of these patients died following operation (mortality 7.7 per cent.): one died in typical coma, the other apparently from the result of the surgical condition. The observation of the diacetic acid and total ammonia output in twenty-four hours is of more importance than the sugar itself. The ultimate aim of treatment is not merely to render the urine sugar free but to decrease the tendency to acidosis and increase carbohydrate tolerance. Large doses of alkalies are urged, preferably sodium bicarbonate, for several days previous to and also after operation, since in this way the neutralization and elimination of the acids formed in the blood are greatly facilitated. Local anesthesia should be used whenever possible. Ether is the safest of the general anesthetics. In the series of cases reported, novocain was used in five instances, combined novocain and ether in one, and ether the remaining twenty. The operative conditions were varied.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

September, III, No. 3, pp. 119-182

1 Epidemiology of Plague in New Orleans. R. H. Creel, San Juan, P. R.
2 *Epizootic Lymphangitis and Sporotrichosis. K. F. Meyer, Berkeley, Calif.
3 *Epidemiologic Study of Poliomyelitis. W. A. Sawyer, San Francisco.

2. Lymphangitis and Sporotrichosis.—Epizootic lymphangitis of equines, Meyer says, is caused in South Africa, Algeria and Jamaica by a parasite which morphologically (gram-positive, irregular inside structure, budding forms) has all the characteristics of a yeast and which biologically behaves, in the complement fixation test, like blastomyces. The similarity with leishmania bodies, which is suggested by some staining reactions (with Giemsa, etc.) and the position of the parasites in the phagocytes, is explained, and it is demonstrated that the serologic tests and the more careful morphologic studies with hematoxylin stains do not justify the creation of a new species of lymphosporidium (Gasparini, 1908). The parasite is not a protozoon, but a blastomyces, namely, the *Cryptococcus farciminosus*. In the United States the disease which was diagnosed as epizootic lymphangitis in 1907, has been recognized as being sporotrichosis. Epizootic lymphangitis apparently does not exist here. Morphologically, by cultures and serum tests, the two diseases can easily be separated. In horses the parasite of sporotrichosis is rare in the pus and can rarely be demonstrated microscopically. The serums from sporotrichotic infections give complement fixation with the *Cryptococcus farciminosus*, indicating a relation of the *Sporothrix schencki-beurmanni* to the cryptococcus. This observation is further proof of the vegetable nature of the parasite of epizootic lymphangitis. Human infections from equine sources of epizootic lymphangitis and sporotrichosis are rare. Meyer calls attention to the fact that it is in the interest of comparative tropical medicine that suspected cases of infections of epizootic lymphangitis should, in future, be carefully investigated bacteriologically and serologically.

3. Study of Poliomyelitis.—In the summer and fall of 1913 several groups of cases of epidemic poliomyelitis appeared in Northern California. Most of the cases were in small towns in which conditions were more favorable for tracing the probable path of infection than they would have been in larger and less isolated communities. The field investigations were carried on by Sawyer in August and November, 1913. The usual observations regarding symptoms of the cases, sanitation of premises, domestic animals, insects, climate, etc., were made, but only the data which bear on possible methods of transfer of the infection are presented by him. Many of the cases showed interesting group relations, suggesting the possibility of transfer by contact. Observations were made regarding the stable fly (*Stomoxys calcitrans*), but no important new evidence was obtained. In none of the cases was there a history of a stable-fly bite.

In many of the cases reported, the infection can be explained on the theory that epidemic poliomyelitis is transmitted through contact from acute cases or carriers. The active virus of poliomyelitis was demonstrated by animal inoculation to be present in rectal washings obtained from a patient fourteen days after the beginning of the paralysis. The virus of poliomyelitis may survive in demonstrable quantities for at least thirty-six hours in specimens of rectal washings if they are kept packed in ice. Therefore, samples taken during a field investigation may be sent to a central laboratory for examination. Since the active virus may leave the body from the rectum, as well as from the nose and mouth, precautions should be taken in the care of the poliomyelitis patient to prevent infection, not only from the nasal and buccal discharges, but also from feces and soiled bedding.

Archives of Internal Medicine, Chicago

October, XVI, No. 4, pp. 509-692

4 *Syphilis and Raynaud's Disease. H. Lisser, San Francisco.
5 *Study of Atrioventricular Rhythm Following Auricular Flutter. P. D. White, Boston.
6 *Creatinin of Blood in Nephritis. Its Diagnostic Value. V. C. Myers and W. G. Lough, New York.
7 *Method for Determination of Plasma and Blood Volume. N. M. Keith, L. G. Rowntree and J. T. Geraghty, Baltimore.
8 Studies of Nitrogen Partition in Blood and Spinal Fluid. A. C. Woods, Boston.
9 *Study of Diagnostic and Prognostic Significance of Venous Pressure Observations in Cardiac Disease. A. H. Clark, Baltimore.
10 Relations of Hypersusceptibility and Insusceptibility Induced in Guinea-Pigs by Instillation of Horse Serum into Nose. H. Sewall and C. Powell, Denver.
11 Changes in P Wave of Human Electrocardiogram. C. H. Goddard, Baltimore.
12 *Severe Anemia with Remarkable Shaped Red Blood Cells and Chronic Leg Ulcer. J. E. Cook and J. Meyer, St. Louis.
13 *Hemolytic Activity of Spleen in Pernicious Anemia. O. H. Robertson, Boston.
14 *Bacteriologic and Clinical Study of Nontuberculous Infections of Respiratory Tract, with Special Reference to Sputum Cultures as Means of Diagnosis. J. A. Luetscher, Baltimore.
15 *Relation of Suprarenals to Pancreas. F. C. Mann and D. Drips, Rochester, Minn.

4. **Syphilis and Raynaud's Disease.**—The case reported by Lisser presented symmetrical gangrene of the feet, and four unquestioned attacks of local asphyxia of the fingers, without exposure to unusual cold. The transient nature of the glucosuria ruled out diabetes as the etiologic factor. A gonorrheal vaginitis with probable arthritis occurred, and a gonorrheal septicemia with emboli might be held responsible for the gangrene of the lower extremities; but the question of such sepsis was never proved and does not seem probable clinically. The patient had congenital syphilis, and an obliterative endarteritis could cause the condition. But the vasomotor attacks of the fingers, combined with the symmetrical gangrene of the feet was so typical of Raynaud's disease that the latter diagnosis must be considered very seriously. In fact, Lisser says, it seems justifiable to conclude that the patient simultaneously suffered from three diseases—gonorrheal vaginitis with arthritis, congenital syphilis and Raynaud's disease.

5. **Atrioventricular Rhythm Following Auricular Flutter.**—A cardiac rhythm is described by White which arises in the atrioventricular junctional tissues of a patient who showed flutter and fibrillation of the auricles prior to the onset of the present rhythm. This atrioventricular rhythm responds in rate readily to exercise, forced respiration, vagal pressure and atropin, but not to digitalis. The sequence of contraction *vs-as* is lengthened by vagal pressure and by digitalis, the latter apparently acting more on the auriculonodal junction than on the pacemaker in the *a-v* tissues. Atropin may shorten the *vs-as* interval prolonged by digitalis, but with the uninfluenced *a-v* rhythm the effect of atropin on the *vs-as* interval is overborne by the increase in the rate of the heart beat resulting from the action of the drug on the *a-v* pacemaker; under such circumstances the *R-P* interval is increased slightly. Premature beats interrupt the rhythm rarely; on such occasions the returning cycles are not compensatory. Coupled beats of an unusual character appear when the *vs-as* interval is markedly prolonged by digitalis or by vagal pressure. The constancy of the atrioventricular rhythm and the failure of sino-auricular rhythm to be restored by atropin or by vagal pressure point to a loss of function of the sino-auricular node, its task as pacemaker being assumed by the atrioventricular junctional tissues.

6. **Creatinin of Blood in Nephritis.**—The estimation of the blood creatinin has been of considerable prognostic value in the work of Myers and Lough, cases showing over 5 mg. per 100 c.c. of blood having invariably terminated fatally. Of eleven cases showing over 5 mg. of creatinin per 100 c.c. of blood, all terminated fatally in from a few days to two months. In this group of cases the phthalein output was practically zero. It seems reasonable to conclude that when a noticeable retention of creatinin has occurred, the functional condition of the kidney has been gravely impaired. In the authors' experience creatinin values from 2.5 to 3.0 mg. per 100 c.c. of blood should be viewed with suspicion and figures of from 3.0 to 5.0 mg. regarded as decidedly unfavorable, while figures over 5 mg. probably indicate an early fatal termination.

7. **Method for Determination of Plasma and Blood Volume.**—The principle underlying the method used by Keith, Rowntree and Geraghty is the introduction directly into the circulation of a nontoxic, slowly absorbable dye, which remains in the plasma long enough for thorough mixing, and the determination of its concentration in the plasma colorimetrically by comparison with a suitable standard mixture of dye and serum. The blood normally constitutes 8.8 per cent., or 1/11.4 of the body weight. Normal individuals have approximately 85 c.c. of blood per kilogram, the extremes being 78 and 97 per kilogram. In pregnancy, before term, the blood and plasma volumes are increased. A condition of serous plethora exists. Within a week or two after delivery, the blood values return to normal. In obesity, the plasma and blood volumes are relatively small. Many cases of anemia exhibit a relatively large plasma volume. Polycythemia in the sense of a high blood count may be dependent on a low plasma volume. It may be associated with a large plasma volume, in which case true plethora is indicated. Hyperglycemia exists without increase in blood volume. In anasarca accompanying myocardial insufficiency the blood volume may be absolutely increased. A small volume is shown in many cases of marked hypertension. Therefore so far as these studies go it would appear that hypertension is not dependent on a large blood volume.

9. **Venous Pressure in Cardiac Disease.**—The venous pressure was followed by Clark at frequent intervals in fourteen cases of cardiac insufficiency at various stages of decompensation and compensation. Two hundred and seventy-six observations were made. Hooker's modified method was used. A diurnal variation in venous pressure of from 8 to 12 cm. of water was noted in four normal and four cardiac cases, all the patients being confined to bed. This variation was based on two-hourly observations over a period of twenty-four hours. It was found that the highest venous pressures occurred during the sleeping hours in the cardiac cases, while in the normal cases, as previously observed by Hooker, the lowest pressures of diurnal variation occurred at night. In the patients who died, either a rapid rise in venous pressure or a continuously high pressure above the 20 cm. level was observed before death. A venous pressure continuously above 20 cm., which was not lowered by the digitalis series, was an indication of grave cardiac involvement.

A venous pressure continuously below 20 cm. gave no definite indication as to the effect of digitalis or strophanthin therapy. A fall in systolic arterial pressure and a rise in venous pressure occurred in four cases before death. Otherwise no constant relation could be noted either between the systolic, the diastolic, the pulse pressure, or the amplitude-frequency product on the one hand, and the venous pressure on the other. Venous pressure and urine output generally showed an inverse variation. The variation was usually coincident, but, if coincidence did not occur, the changes in venous pressure tended to precede the changes in kidney function. The venous pressure was lowered in seven out of eight pleural tappings. Venesection lowered the venous pressure in three cases observed, but the subsequent rise in pressure was rapid.

12. **Anemia with Remarkable Red Blood Cells.**—Many of the red cells in the case cited by Cook and Meyer, about one in three, on rough count, were elongated, oat-shaped or crescent-shaped, with the same color and structure as the normal red blood cells. Some of the crescent-shaped cells in the fresh drop would curl and bend as if they were unusually pliable. There was considerable variation in the size of the red cells and also many structures which seemed to be fragments of cells, as if some of the cells had been crushed. The rather uniform character of these fragments, however, suggests that they were not artefacts. Nucleated reds were always present

and at times were quite numerous. With Romanowsky stains there was only slight polychromatophilia. The red cells varied in number between 1,800,000 and 3,100,000, usually about 2,500,000; there was at all times a leukocytosis of mild degree; the color index averaged slightly below 1, and there was a constant eosinophilia at the expense of the polymorphonuclear cells.

13. **Hemolytic Activity of Spleen in Pernicious Anemia.**—In a study of the hemolytic activity of the fresh spleen obtained by Robertson at operation, from six patients with pernicious anemia, it was found that extracts of the spleen pulp made with both normal salt solution and alcohol, possessed no hemolytic properties. An ethereal extract, on the other hand, showed a marked hemolytic action. However, the hemolytic substance contained in this extract belonged to the group of unsaturated fatty acids and has been obtained in equally strong concentration from the normal liver and intestine. The only change in the splenic vein blood obtained at operation, which could not be accounted for by manipulation, was a decreased resistance of the red cells. These cells were definitely less resistant than those of the peripheral circulation in the same individual and in normal controls. These findings seem to exclude any gross or easily demonstrable manifestation of hemolytic activity on the part of the spleen. However, the decreased resistance of the red cells in the splenic vein, would suggest that the spleen in pernicious anemia elaborated some toxic substance or enzyme which so injures the blood cells during their passage through that organ that they are more susceptible than normally to destruction elsewhere. It seems probable that in some other part of the body there is elaborated an abnormal hemolysin or an abnormally acting normal hemolysin.

14. **Nontuberculous Infections and Value of Sputum Cultures.**—According to Leutscher the pneumococcus is the cause of 62.44 per cent. of all the nontuberculous infections below the larynx, and the influenza bacillus in 28.5 per cent. These two organisms cause 90.94 per cent. of the infections of the bronchi and lungs; 74.96 per cent. of the infections of the larynx, and 31.29 per cent. of the infections of the nose, throat and sinuses. The streptococcus, contrary to common belief and textbook reports, is only rarely the cause of infections in the lungs, and when found, is usually associated with complications such as lung abscess, bronchiectasis, carcinoma, etc. In infections of the head, however, it assumes the predominant rôle, especially in the tonsils. The *Staphylococcus aureus* was never found to be the cause of the acute infections of the lungs or larynx and only once was it found in acute coryza and acute sinusitis. The *Micrococcus catarrhalis* may cause rhinitis, laryngitis, acute bronchitis and acute bronchopneumonia. It was found in pure culture in three out of thirty-seven cases of acute rhinitis, five out of thirty-eight cases of acute laryngitis, and in one each of acute bronchitis and primary bronchopneumonia. The colon and typhoid bacillus rarely if ever produce acute lesions in the lung. The typhoid bacillus, however, may produce lung abscess following an infarct.

15. **Relation of Suprarenals to Pancreas.**—Mann and Drips were unable to demonstrate any specific relationship between the suprarenals and the pancreas.

Boston Medical and Surgical Journal

October 21, CLXXIII, No. 17, pp. 603-646

16 Relation of Medical Profession to Preventive Medicine. H. Emerson, New York.
17 Syphilis We See But Do Not Recognize and Importance of Familial Studies. H. F. Stoll, Hartford, Conn.
18 Some of Anatomic Pathologic Problems in Tuberculosis. F. M. Pottenger, Monrovia, Cal.
19 Acute Otitis Media in Infancy and Early Childhood; Avoidable Mistakes in Diagnosis, Prevention, Treatment. W. R. P. Emerson, Boston.
20 Can Speech Present a Sign of Congenital Syphilis? W. B. Swift, Boston.
21 Unusual Case of Obstructing Prostate Diagnosticated with Difficulty from Tabes. J. D. Barney and J. B. Ayer, Boston.
22 Report of Interesting Stomach Case. F. E. Lewis, Newton, and R. D. Leonard, Boston.

Illinois Medical Journal, Chicago

October, XXVIII, No. 4, pp. 241-320

23 Mental Disease. C. W. Sawyer, Marion, Ohio.
24 Observations in Psychiatry. B. F. Williams, Lincoln, Neb.
25 Care of Insane Under Illinois State Board of Administration. H. J. Gahagan, Elgin.
26 Abnormal Conditions of Thyroid Gland and Its Relationship to Neurasthenia and Mental Defects. C. L. Reeder, Tulsa, Okla.
27 Psychoses in Twins. P. B. Newcomb, Osawatomie, Kan.
28 Mental Hygiene in Childhood. E. B. McCready, Pittsburgh.
29 Relation of Pfropfhebephrenia and Dementia Praecox to Crime. W. J. Hickson, Chicago.
30 Genesis of Certain Phenomena as Interpreted in Psychanalytical Study of Case of Paranoid Dementia Praecox and Case of Hysteria. M. A. Bahr, Indianapolis.
31 Why Delay in Recognizing Locomotor Ataxia? C. F. Neu, Indianapolis.
32 Remedies in Crime Situation. W. Healy, Chicago.
33 Value of Environment. H. P. Sights, Hopkinsville, Ky.
34 Prevalence of Syphilis in Penal Institution. O. M. Kramer, Columbus.
35 Inherited Syphilis in Feeblemindedness. W. H. McKay, Columbus.
36 Mental Examination of Delinquent Boys and Girls. T. H. Haines, Columbus.
37 Diagnosis and Present Status of Treatment of Syphilis. L. D. Smith, Chicago.
38 Pre-Institutional Care of Insane. C. C. Ellis, Dunning.
39 Causative Factors in Psychoneuroses. M. Solomon, Chicago.

Journal of Experimental Medicine, Lancaster, Pa.

October, XXII, No. 4, pp. 389-516

40 Chemoserotherapy of Experimental Pneumococcal Infection. H. F. Moore, New York.
41 *Mechanism of Anaphylactic Shock. J. W. Jobling, W. Petersen and A. A. Eggstein, Nashville, Tenn.
42 *Biology of Peripheral Nerves in Transplantation. R. Ingebrigtsen, Christiania.
43 *Diagnostic Value of Placental Blood Film in Estivo-Autumnal Malaria. H. C. Clark, Ancon, Canal Zone.
44 *Immunologic Study of Bacillus Influenza. M. Wollstein, New York.
45 *Mechanism of Curative Action of Antipneumococcus Serum. C. G. Bull, New York.
46 *Method of Serum Treatment of Pneumococcic Septicemia in Rabbits. C. G. Bull, New York.
47 *Fate of Typhoid Bacilli When Injected Intravenously into Normal Rabbits. C. G. Bull, New York.
48 Agglutination of Bacteria in Vivo. C. G. Bull, New York.
49 *Fatty Degeneration of Cerebral Cortex in Psychoses, with Special Reference to Dementia Praecox. H. A. Cotton, Trenton, N. J.

41. **Mechanism of Anaphylactic Shock.**—The mechanism of acute intoxication is stated by the authors to be as follows: An immediate mobilization of a nonspecific protease in large amounts; the formation of a state of antiferment deficiency through colloidal changes; a simultaneous cleavage of serum proteins (proteoses) through the peptone stage to amino-acids; an intoxication by these peptones with a resulting cellular injury, made evident by an increase in serum lipase, the fall in temperature and other manifestations of acute shock. The elements of specificity lie in the mobilization of the nonspecific cellular ferment and the colloidal changes in the serum, not in the production of specific ferments.

42. **Peripheral Nerves in Transplantation.**—Ingebrigtsen found that in autoplastic transplanted nerves a degenerative process occurs which resembles the ordinary Wallerian degeneration, but appears a little more slowly than the latter. The cells of Schwann are in a condition of survival and are capable of multiplication after the transplantation. In homoplastic transplanted nerves a degenerative process resembling a Wallerian degeneration, somewhat delayed, occurs. The cells of Schwann multiply, and for sometime at least are in a condition of survival. After twelve to fourteen days an abundant and increasing immigration of lymphocytes is observed, and from the eighteenth day the cells of Schwann develop a necrobiotic appearance. In heteroplastic transplanted nerves numerous myelin ovoids are formed during the first four to five days, but there is no proliferation of the cells of Schwann and no Wallerian degeneration is seen. The graft becomes necrotic within about two weeks.

The formation of ovoids that occurs during the first four to five days after the performance of the heteroplastic transplantation does not reveal the condition of the life of the graft. This formation of myelin ovoids is found in the nerve fibers when they have been kept in an incubator for twenty-four hours in Ringer solution or in homologous or heterologous serum, but it is not found in the fibers after their incubation in isotonic salt solution, the presence of calcium being necessary for the occurrence of ovoid formation. Heteroplastic transplanted nerves become necrotic. They are unsuitable for bridges in cases of nerve defects, and Ingebrigtsen's results explain the failure of the attempts at heteroplastic transplantation of nerves in human beings. To bridge a nerve defect by implantation one must use autoplastic or homoplastic grafts. The occurrence of a Wallerian degeneration in these grafts during the first two or three weeks after the transplantation should make bridging a promising operation; for in this period the grafts resemble the peripheral part of a divided nerve and must be assumed to be capable of regeneration, and thus are different from dead material.

43. **Value of Placental Blood Film in Malaria.**—Clark claims that the pregnant state encourages attacks of malaria by lowering bodily resistance and by furnishing an additional harbor for the development of parasites. A tenable theory in regard to most attacks of this nature, occurring in cases under professional care, would appear to be the development of latent malaria (malarial carriers) into acute attacks toward the close of the pregnant state. The women who expose themselves offer favorable conditions to the introduction of a primary infection. Malaria frequently interrupts the late stages of pregnancy and sometimes causes the death of the mother and the fetus, more often the latter. The commonest mishap is miscarriage late in pregnancy. Occasional stillbirths occur and sometimes there is a fatal issue to both the mother and child. Clark found that the placental blood film examination is worthy of routine application wherever estivo-autumnal malaria is endemic. This type of malaria when associated with labor and the early days of the puerperium can be more easily and certainly diagnosed by the use of this film and a polychrome stain than by employing the usual films made from the mother's peripheral blood at the time of labor. The placental film in such an infection offers an abundance of adult parasites and far more evidence of the presence of pigment, while the peripheral blood film frequently offers but a scant number of the small ring or discoid forms of a parasite. The examination of the present series revealed positive placental films in nineteen cases, while but eight of these same cases were positive in the peripheral blood film examination. On the other hand, no peripheral blood films were found positive in which the associated placental films did not reveal a far more abundant evidence of the infection.

44. **Immunologic Study of Bacillus Influenza.**—Briefly, the results of Wollstein's investigation are as follows: Influenza bacilli therefore vary in pathogenic effect both for man and animals, but they are not distinguishable by means of serologic reactions into different types. Apparently all influenza bacilli belong to one class or race, irrespective of origin or virulence.

45. **Curative Action of Antipneumococcus Serum.**—According to Bull an active antipneumococcus serum causes agglutination of pneumococci in vitro and in vivo. The antiserum acts in far greater dilution in causing agglutination as determined by the microscopic than by the macroscopic test. The antiserum when injected into the circulation of rabbits suffering from pneumococcus bacteremia causes a rapid disappearance of the diplococci from the blood. This disappearance is brought about by instantaneous clumping of the diplococci in vivo and the removal of the clumps by the liver, spleen, lungs and possibly other organs. The diplococci which fail of agglutination tend not to be phagocyted and persist longer in viable form than the ingested clumps. The protection afforded by the immune serum is specific for the type organism and is determined by the presence of agglutinins which prepare the pneumococci for removal from the blood and phagocytosis on a large scale. Normal rabbit blood is devoid of agglutinating and of protective effect against virulent pneumococci. Agglutination is not merely an incidental phenomenon, but constitutes an essential process in association with phagocytosis in the protection of the rabbit against pneumococcus infection.

46. **Treatment of Pneumococcic Septicemia in Rabbits.**—The treatment of pneumococcic septicemia in rabbits by small repeated doses of immune serum was successfully carried out by Bull. The number of pneumococci capable of being brought to destruction through phagocytosis in the organs in this way was great. Not all the rabbits treated with small repeated doses of the serum survive. Those that succumb do so, not to a general infection, but to a pneumococcus meningitis. The explanation of this phenomenon is simple. When the number of pneumococci originally inoculated is great a small number penetrate into the subdural space. Those in this space do not come under the influence of the serum, hence they are not agglutinated and prepared for phagocytosis, whence they multiply and set up a fatal meningitis. The activity of the immune serum administered in this way against virulent pneumococci is so great that a revision of ones notions as to the limit of powers of the antiinfectious serums seems necessary. It is patent that the problem is not simply a relation between quantity of immune bodies and number of bacteria. It is more complex than that conception indicates. The factor of the leukocytes and the degree of their possible activities under the conditions of the experiment come into play. Hereafter, in defining the mode and power of action of antiinfectious serums the condition of cooperation of the body forces will have to be more strictly considered.

47. **Fate of Typhoid Bacilli Injected Into Normal Rabbits.**—Bull found that typhoid bacilli are agglutinated promptly in the circulating blood of normal rabbits and quickly removed from the blood stream. The clumped bacilli accumulate in the organs and are taken up by assembled polymorphonuclear leukocytes in the liver, spleen and possibly other organs. The phagocyted clumps of bacilli are digested and destroyed by the phagocytes. Hence, destruction of typhoid bacilli *intra vitam* is brought about by an entirely different process than is the destruction by serum and whole blood in vitro. While the latter is caused by bacteriolysis, the former results from agglutination and intraphagocytic digestion.

49. **Fatty Degeneration of Cerebral Cortex.**—From the data provided by his investigations Cotton concludes that in all pathologic processes of the cortex which end in dementia and death, the fatty degeneration of the elements of the cortex plays a not unimportant part. The characteristic change for most of the psychoses is found in a great increase in amount of fatty deposits when compared to normal individuals of the same age. In some processes such as senile dementia and dementia praecox the fatty substance appears to fill completely the cell body, and these cells have apparently lost all their functioning power. It is not common to find the fatty deposits in the processes of the ganglion cells except in dementia praecox, and to a limited extent in senile dementia. In other cases the pathologic variety of the fatty deposits in the ganglion cells is seen to be diffused over the whole ganglion cell. Cotton was able especially to observe this in infectious psychoses, in general paralysis, and in epilepsy. The so-called central neuritis assumes a peculiar attitude in that it plainly leads swiftly to an acute fatty degeneration of the ganglion cells, in which there exists an inclination of the fatty granules to flow together into large masses. Frequently the fatty degeneration of the ganglion cells appears to be connected with the sclerosis of the cells, especially when it is a matter of slowly progressing alterations of degeneration. In the young, chronic cases of dementia praecox, far-reaching fatty degeneration of the ganglion cells, especially in the second and third cortical strata, likewise occurs. These findings should constitute an important contribution to the pathologic anatomy of dementia praecox.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

October, VII, No. 3, pp. 225-383

50 *Seat of Emetic Action of Various Drugs. C. Eggleston and R. A. Hatcher, New York.
51 *Influence of Salicylates on Elimination of Uric Acid and Other Waste Products from Blood. W. Denis, Boston.
52 *Studies on Circulation in Man: Change Produced in Blood Flow (in Hands) Under Influence of Digitalis in Cases of Auricular Fibrillation. G. N. Stewart and R. W. Scott, Cleveland.
53 Id. Criteria by Which Deficiencies in Blood Flow (in Hands or Feet) Due to Mechanical Causes May Be Discriminated from Changes Due to Functional (Vasomotor) Causes. G. N. Stewart, Cleveland.
54 *Effects of Veratrum Viride and Cevadin (Veratrin). J. D. Pilcher and T. Sollmann, Omaha.
55 *Physiologic Test for Cholin and Some of Its Applications. R. Hunt, Boston.
56 Action of Opium Alkaloids, Individually and in Combination with Each Other, on Respiration. D. I. Macht, Baltimore.
57 Vasomotor Reaction in Nicotin; Locus of Stimulation. R. G. Hoskins and S. W. Ranson, Chicago.

50. **Seat of Emetic Action of Various Drugs.**—The results of approximately 500 experiments, made to determine the probable seat of the emetic action of some of the more important drugs, and of others of less importance are reported by Eggleston and Hatcher. They found that practically all alkaloids and alkaloidal drugs in common use, including morphin and preparations containing it, which produce nausea and vomiting, either as their chief or as their side actions, do so by direct action on the vomiting center. Sodium salicylate, picrotoxin and the digitalis bodies also produce nausea and emesis through direct central action. There may be, in the case of certain drugs with irritant properties, synergistic reflex and central actions, whereby a smaller dose by mouth may be more effective than would be the case for either action alone. An illustration of this seems to be afforded by emetin. The evidence in favor of the central action does not in every instance exclude the possibility of the drugs also having an irritant action on the alimentary mucosa when given orally. It is probable that the ipecac alkaloids, veratrin and sodium salicylate may have this reflex action in man, at least in susceptible individuals. Some of the advantages claimed for certain proprietary preparations of opium, such as narcophin and pantopium are refuted by the results of the authors' experiments, and they believe that this is also probably true, to a certain extent, of some of the proprietary preparations of salicylic acid.

51. **Influence of Salicylates.**—The increased output of uric acid following salicylate medication, in Denis' opinion, is due to a lowered threshold value of the kidney, not only for uric acid, but in all probability for other waste products as well. Such being the case, he says, it may well be that the beneficial effects resulting from the use of salicylates in acute rheumatic fever, may in part, at least, be due to a power possessed by this class of drugs of increasing kidney permeability, thereby facilitating the rapid and more or less complete excretion of the toxins which produce symptoms of these diseases.

52. **Influence of Digitalis in Cases of Auricular Fibrillation.**—In three cases with auricular fibrillation, the blood flow in the hands was promptly and decidedly increased after the administration of digitalis. In a fourth case, which had not been considered to respond well to digitalis, the hand flow was somewhat increased when the drug was stopped after a rather long course of it. Digitalis having been again begun, the hand flow at the end of a week was again found to be diminished.

54. **Effects of Veratrum Viride.**—According to Pilcher and Sollmann veratrum viride and the related alkaloid cevadin are without direct action on the vasomotor center. As a result of anemia from the fall in blood pressure, or from asphyxia from respiratory depression, the center may be stimulated in about half the experiments; such action may be prevented by artificial respiration. Convulsant doses of cevadin also increase the central vasomotor tone.

55. **Physiologic Test for Cholin.**—The method proposed by Hunt consists in converting the cholin into the acetyl derivative (by heating the cholin with acetyl-chlorid in a sealed tube in the water bath) and testing the physiologic action of the reaction product. Details as to the method as applied to various fluids and organs are given.

Kentucky Medical Journal, Bowling Green

October, XIII, No. 11, pp. 471-506

58 Today and Yesterday in Medicine. O. P. Nuckols, Pineville.
59 Ossification of Bones of Hand. J. W. Pryor, Lexington.
60 Common Sense in Dermatology. M. L. Ravitch, Louisville.
61 Difficult Presentations. J. T. Reddick, Paducah.
62 Indications for and Limitations of Turbinectomy. C. W. Reynolds, Covington.
63 Scopolamin as General Anesthetic in Surgery. J. O. Jenkins, Newport.
64 Twilight Sleep. A. E. Threlkeld, Wheatley.
65 Law of Heredity. M. Bell, Jr., Eminence.
66 Placenta Praevia Centralis; Cesarean Section for Relief. W. O. Humphrey, Louisville.

Lancet-Clinic, Cincinnati

October 2, CXIV, No. 14, pp. 289-310

67 Diagnosis and Treatment of Fistula in Ano. R. H. Barnes, St. Louis.
68 Operations on Gallbladder in Relation to Life Expectancy. W. S. Harpole, Chicago.
69 Use of Pituitary Extract in Inevitable and Incomplete Abortions. B. J. O'Connor, Louisville, Ky.
70 Obscure Fevers of Infancy and Childhood. B. K. Rachford, Cincinnati.

October 9, No. 15, pp. 311-338

71 Differential Diagnosis and Preoperative Treatment of Prostatic *Hypertrophy.* W. S. Ehrich, Evansville, Ind.
72 Pellagra and Uncinaria Disease in Relation to Life Insurance. M. J. White, Washington, D. C.
73 Principles and Methods which Result in Intellectual Precocity. T. A. Williams, Washington, D. C.

Medical Record, New York

October 23, LXXXVIII, No. 17, pp. 681-726

74 Pancreas Stone Colic. M. Einhorn, New York.
75 Impotence in Male. M. Hühner, New York.
76 *Immunized Milk in Prophylaxis and Treatment of Typhoid. J. Rosenberg, New York.
77 Section of Posterior Roots of Sixth to Tenth Thoracic Nerves for Relief of Severe Gastric Crises in Locomotor Ataxia. F. W. Bancroft, New York.
78 Intelligent Treatment of Diseases of Skin. W. S. Walsh, Providence, R. I.
79 Differential Diagnosis between Cerebral Hemorrhage and Softening Due to Thrombosis. G. Burke and J. Nuzum, Chicago.

76. **Immunized Milk in Treatment of Typhoid.**—Rosenberg states that immunized milk is absolutely safe and harmless, while antityphoid vaccination often causes more or less severe systemic symptoms. Immunized milk is an excellent medium to provide general immunization for typhoid at trifling expense and without risk. It causes neither local nor systemic ill-effects. It is fatal to but one organism, namely, the typhoid bacillus. Drinking one quart of immunized milk per day for a period of about two weeks provides adequate protection for two months. Immunity, however, can be prolonged indefinitely by drinking one or two quarts of immunized milk every ten days to two weeks. Besides an efficient prophylactic, immunized milk will probably prove itself to be a valuable aid in the treatment of typhoid, especially in the early stage of the disease. Rosenberg urges that immunized milk should be used at the onset, even before a diagnosis is possible, and should be given in every suspicious case; it may succeed in aborting the disease, preventing the infection by augmenting the body's natural defenses. It will provide the needed antibodies to destroy the invading host, neutralize the bacterial toxins at a period when the body is not as yet prepared to cope with the infectious organism.

Michigan State Medical Society Journal, Grand Rapids

October, XIV, No. 10, pp. 501-554

80 Past, Present and Future of Michigan State Medical Society. R. Peterson, Ann Arbor.
81 Medical Schools of Last Half Century. T. A. McGraw, Detroit.
82 Retrospect of Early History of Michigan State Medical Society. G. E. Ranney, Lansing.
83 Two Tumors of Head. C. G. Darling, Ann Arbor.
84 Case of Spindle-Cell Sarcoma of Accessory Sinuses. R. B. Canfield, Ann Arbor.
85 Age, Relationship Between Types of Malignant Diseases. C. V. Weller, Ann Arbor.

Modern Hospital, St. Louis

October, V, No. 4, pp. 221-310

86 Requirements of Modern Contagious Disease Hospitals. F. W. Southworth and L. W. Johnson, Washington, D. C.
87 First County Hospital Under New Texas Law. L. Shenners.
88 Hospital Noises and How to Minimize Them. B. Hollings, Boston.
89 Training School Organization and Work in Mental Hospitals. C. McCabe, Baltimore.
90 *Hospital Library; Books for Patients.* E. K. Jones, Waverly, Mass.
91 E. W. Sparrow Hospital, of Lansing, Michigan. M. Landis, Lansing, Mich.
92 Baker Sanatorium at Charleston, South Carolina. J. D. Newcomer, Charleston, S. C.
93 Training of Superintendents of Small Hospitals. E. J. Johns.
94 Building of Hospital; Construction. O. H. Bartine, New York.
95 Mechanical Equipment of Hospitals. D. D. Kimball, New York.

New Jersey Medical Society Journal, Orange

October, XII, No. 10, pp. 481-532

96 Every Obstetric Case a Surgical Case. J. W. Fithian, Camden.
97 Medical Witness. W. J. Arlitz, Hoboken.
98 Treatment of Old Brain Injuries. M. W. Reddan, Trenton.
99 Laryngoscopy, Bronchoscopy and Esophagoscopy. H. Vaughan, Morristown.

New Orleans Medical and Surgical Journal

October, LXVIII, No. 4, pp. 215-286

100 Cardiospasm Causing Enormous Dilatation of Esophagus. (To be continued.) R. Matas, New Orleans.
101 Infectious Diarrhea. C. J. Bloom, New Orleans.
102 Incomplete Amputation of Penis with Successful Repair. P. J. Gelpi, New Orleans.
103 Clinical Interpretation of Serum Tests for Typhoid and for Syphilis. S. C. Jamison, New Orleans.
104 Intestinal Parasites in Honduras. N. Barlow, Cuyamel, Honduras.

Northwest Medicine, Seattle

October, VII, No. 10, pp. 305-338

105 Prevention of Cancer. A. E. Rockey, Portland, Ore.
106 Bacterial Etiology of Rheumatism. C. S. Wilson, Tacoma.
107 Rheumatism as Factor in Surgical Diagnosis. H. E. Allen, Seattle.
108 Relation of Tonsils to Rheumatism. W. Johnston, Spokane.
109 Gastro-Intestinal Conditions and Rheumatism. A. P. Lensman, Seattle.
110 Complications and Sequelae of Rheumatism. W. S. Griswold, Seattle.
111 Treatment of Rheumatism. A. M. Smith, Bellingham.
112 Lymphangioplasty in Treatment of Some Leg Ulcers. J. T. Mason, Seattle.
113 Expert Evidence in Courts from Standpoint of Physician. P. Rockey, Portland, Ore.
114 Tonsillectomy and Illustrations of Operation with Special Knife. S. M. Samuels, Seattle.
115 New Refraction Cabinet. A. B. Mattice, Seattle.

New York Medical Journal

October 23, CII, No. 17, pp. 833-880

116 Tuberculosis of Patella. A. J. Davidson, Philadelphia.
117 Some Unusual Gastro-Intestinal Cases. A. Bassler, New York.
118 Extragenital Chancres. H. K. Gaskill, Philadelphia.
119 Opposite Sex Twins in One Body? W. L. Howard, Westboro, Mass.
120 Endamebic Dysentery. N. Barlow, Cuyamel, Honduras.
121 Epididymis-Vas Anastomosis for Sterility. W. F. Bernart, Chicago.
122 Phenoltetrachlorphthalein Test of Liver Function. M. Kahn and J. R. Johnston, Pittsburgh.
123 Injuries to Bone at Tendon and Ligament Insertions without Local Tenderness. A. H. P. Leuf, Philadelphia.
124 New Profession; Social Welfare Worker. M. B. Gordon, New York.
125 Rectal and Anal Fistula. J. Frankel, New York.

Oklahoma State Medical Association Journal, Muskogee

October, VIII, No. 5, pp. 153-184

126 Phases of Pellagra. F. S. Clinton, Tulsa.
127 Pellagra in Oklahoma and Comparison with Statistics from Elsewhere. C. R. Day, Oklahoma City.
128 Local Anesthesia. D. E. Little, Eufaula.
129 Surgical Anesthesia. T. C. Burns, Oklahoma City.
130 Local Anesthesia in General Surgery; Prevention of After Pain and Shock. L. F. Watson, Oklahoma City.

Public Health Journal, Toronto

October, VI, No. 10, pp. 477-530

131 Administration of Toronto Department of Public Health. H. L. Brittain, Toronto
132 Pasteurization of Milk. J. Race, Ottawa.
133 Tuberculosis and Bacteriology of Every Day Life. J. Grant, Ottawa.
134 Registration of Tuberculosis. E. Dyke, Toronto.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

October, XXIII, No. 10, pp. 285-308

135 Pyelitis in Infancy and Childhood. J. O. Segura, Houston, Tex.
136 Present Status of Tonsil Surgery. J. O. McReynolds, Dallas, Tex.

United States Naval Medical Bulletin, Washington, D. C.

October, IX, No. 4, pp. 547-746

137 Epidemiology of Outbreak of Measles at Naval Training Station, Norfolk, Va. C. E. Riggs, U. S. Navy.
138 Present Status of Hospital Corps. W. E. Eaton, U. S. Navy.
139 Use of Hospital Ships in Time of War. R. J. Straeten, U. S. Navy.
140 Venereal Disease Aboard Ship. G. F. Cottle, U. S. Navy.
141 Some Dangers in Passing Ureteral Catheter to Kidney. B. C. Willis, U. S. Navy.
142 Shanghai and Yangtze River Hospitals. R. H. Laning, U. S. Navy.
143 Some Medical Aspects of Upper Yangtze River Country. D. C. Post, U. S. Navy.
144 Some Medical Conditions in China. R. G. Davis, U. S. Navy.
145 Ambulance Motor Boat for Hospital Ships. E. M. Blackwell, U. S. Navy.
146 Unusual Type of Typhus on U. S. S. Monocacy; Report of Case. W. B. Hetfield, U. S. Navy.
147 Injury by Dynamite Explosion. G. C. Thomas and L. W. Johnson, U. S. Navy.
148 Case of Hemorrhagic Pancreatitis. G. C. Thomas and L. W. Johnson, U. S. Navy.
149 Salvarsan in Treatment of Schistosomiasis; Report of Case. D. C. Post, U. S. Navy.
150 Unusually Severe Case of Urticaria. W. E. Eaton, U. S. Navy.
151 Early Reinfection with Syphilis. T. W. Richards, U. S. Navy.
152 Fatal Case of Cecal Ulceration with Extensive Complications. W. L. Mann, Jr., U. S. Navy.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 2, II, No. 2857, pp. 493-524

1 *Injuries of Superior Longitudinal Sinus. G. Holmes and P. Sargent.
2 Treatment of Gunshot Wounds of Head, with Special Reference to Apparently Minor Injuries. J. E. H. Roberts.
3 Treatment of Gunshot Wounds of Head. G. G. Tabuteau.
4 *Treatment of Septic Wounds by Continuous Oxygenation or Irrigation. W. A. Wood.
5 Sandfly Fever and Bacteriology; Vaccine Treatment. C. J. Stocker.
6 Adaptable Eye Shade for Microscopic Use. S. G. Shattock.

1. Injuries of Superior Longitudinal Sinus.—Up to the present Holmes and Sargent have seen over seventy cases in which the longitudinal sinus was injured or the circulation in its venous tributaries disturbed in its immediate neighborhood, that is, in the lateral lacunae, or in cases in which the veins enter it. In many of these cases there was no direct damage to the brain, either by the projectile or by depressed fragments of bone, but in others the disturbance of the venous circulation was associated with gross cerebral lesions. The symptoms in these cases have varied much according to the severity of the injury and the region in which the sinus was damaged. In many cases in which the chief symptoms were due to injury of the longitudinal sinus or its tributary veins, associated lesions of the brain existed. The most common type of injury is a gutter or tangential wound at the middle line of the head, which may be either sagittal, coronal or oblique. Frequently, however, the injury was a perforating wound or an in-and-out-wound of the skull, the entrance and exit being on opposite sides of the middle line and close to it, with considerable comminution of the bone between them; here the sinus was generally lacerated, and in certain instances it was completely cut through by the missile, but it was occasionally only compressed by indriven fragments of bone.

The distribution of motor symptoms is unusual and the type of motor paralysis likewise. The extent of the palsy varies according to the site, severity and extent of the lesion; in twenty cases all limbs were affected; in thirty-one both legs and one arm were weak; in sixteen only the lower limbs were affected; in six the symptoms were mainly hemiplegic and in five one leg alone presented any palsy. The distribution of the paralysis and its relative severity in different segments of the limbs is, however, peculiar, and differs from that of the cerebral palsies, most commonly seen in civil practice. The more proximal segments of the upper limbs are most seriously paralyzed, and the weakness diminishes distalward. In this respect the paralysis contrasts strongly with that seen in the ordinary hemiplegia due to vascular lesions, in which the distal segments of the upper limbs are almost invariably more severely affected than the proximal and recover less rapidly. Further, a definite paresis of the face or tongue is extremely uncommon, and is at the most transient, while speech is never affected in the pure sinus injuries. The trunk muscles may be, however, affected, especially those of the back; the patient is then unable to sit up and often cannot roll over in bed.

The distribution of the palsy in the legs is the converse of that of the arms; here it is always the distal movements that suffer more severely, and in slight cases and during the recovery of more severe ones the authors have repeatedly seen complete paralysis of the toes and ankle only, with the knee movements only relatively weak and those of the hips strong. Even more striking than the unusual distribution of the paralysis is the rigidity which is almost always associated with it. It is generally coextensive with the paralysis, and closely related to it in its degree. The early onset of this rigidity is another striking point; the authors have seen it well marked within twenty-four hours of the infliction of the wound, and in some instances at least it has been noticed by the patient almost at once. It has shown no tendency to increase after the patients have reached the base hospitals; that is, usually within forty-eight hours, but, on the other hand, it gradually diminishes *pari passu* with any return of power that may occur.

The rigidity is often so great that the resistance to passive movement is extreme; it may, for instance, be quite impossible for a man of moderate strength to separate the knees. Peripheral stimulation, as pricking the sole or palm, increases the rigidity and the legs may become more rigid when the patient coughs or attempts any strong voluntary movement with his arms. Despite the great rigidity, there seems to be little tendency for contractures, that is, organic shortening of the muscles, to develop. The sensory disturbances in these cases are almost always those of a pure cortical lesion unaccompanied by any shock effect. In a certain number of cases the functions of the bladder were affected. As a rule, the functions of the cranial nerves were unaffected, but in several patients the ocular movements were disturbed. The general symptoms of intracranial pressure have been as a rule pronounced.

4. **Septic Wounds Treated by Continuous Oxygenation or Irrigation.**—A severely lacerated and septic wound about the knee in a child was treated by Wood by continuous oxygenation under pressure. A rubber bag constructed open at both ends and provided with sleeves at the ends and with a valve through which the oxygen can be introduced, was slipped over the leg like a stocking and the two ends were rendered gas-tight by firm bandaging. Oxygen was introduced from a cylinder up to the pressure of 3 to 4 pounds. With ordinary bandages the bag remained inflated with oxygen for about twelve hours, with rubber bandages, for longer. The wound rapidly cleaned and the granulation tissue assumed a most healthy appearance in a shorter time than one would have expected. The discharge collects at the bottom of the bag and can be either drawn off by a drain tube, or the bag can easily be removed, boiled, replaced and refilled within a short time and without pain.

Indian Medical Gazette, Calcutta

September, L, No. 9, pp. 321-360

7 Some Experiences in War. H. Watts.
8 Review of Year's Medicolegal Work in Calcutta Morgue, 1914 (Including Comparative Figures for Triennium 1912-1914). O. S. Moses.
9 Serodiagnosis of Syphilis. W. D. Sutherland and G. C. Mitra.
10 Acidosis and Edema in Its Relation to Glaucoma. H. Smith.
11 Case of Malingering. A. W. Overbeck-Wright.
12 Case of Typhoid and Paratyphoid. M. L. Treston.
13 Operation of Shortening Round Ligaments for Cure of Retrodisplacements of Uterus. T. Jackson.
14 Second Cesarean Section. E. J. Murphy.
15 Method of Treatment of Hemorrhage from Lateral Sinus. S. Sen.
16 Hemorrhage into Pericardial Sac. L. Fink.
17 Abnormal Labor Cases. D. J. Asana.

Lancet, London

October 2, II, No. 4805, pp. 739-794

18 Operative Findings in Twelve Cases of Chronic Intestinal Stasis. W. S. Bainbridge.
19 Prevention of Fistula in Ano. P. Lockhart-Mummery.
20 Duration of Treatment in One Thousand and Five Hundred Cases. J. Rae.
21 *Two Cases of Plumbism from Unusual Sources. A. J. Hall.
22 *Tonsils and Chronic Cervical Adenitis. H. Gardiner.
23 Shrapnel Located at Back of Orbit; Successful Extraction. W. J. Collins.
24 Massage in After-Treatment of Wounded. J. B. Mennell.
25 Case of Traumatic Tetanus. J. D. Hayward.
26 Cartridge Shot in Appendix. C. C. Boyle.
27 Breathing and Physical Exercises for Use in Cases of Wounds in Pleura, Lung and Diaphragm. C. MacMahon.

21. **Plumbism from Unusual Sources.**—In the first case cited by Hall the patient drank for some years "horehound beer." While formerly they had sold it in stone jars, recently they had kept it in large barrels in the cellar and "drawn" it up into the shop by an ordinary "beer-tap." This meant several feet of lead piping for the acid solution to pass through. A sample of the "horehound beer" as drawn from the tap for the consumer contained 1 grain of lead per gallon. The second patient was fond of his garden, and in order to protect his fruit and flowers from the birds carried with him an air-gun to shoot the birds whenever he went into the garden. In every suit of clothes he reserved the right-hand vest pocket for the little lead pellets used in his gun, so that at any time he could quickly have a shot at any bird he saw. He had also acquired a habit of constantly putting the finger and thumb of his right hand into this vest pocket and fingering these pellets.

22. **Tonsils and Chronic Cervical Adenitis.**—Gardiner claims that in the majority of cases (80 per cent.) of chronic cervical adenitis in cases in which no obvious source of infection is present, the tonsils are infected. The size of the tonsil makes no difference as to their infectivity, except that the small fibrotic variety is likely to be more dangerous than the large. The number of cases in which tubercle bacilli are present is relatively small, but is larger than in simple cases of enlarged tonsils. The frequent presence of other organisms than the tubercle bacillus in these cases suggests that a large proportion of the so-called chronic tuberculous glands are in reality chronic septic glands. The organisms are present in the deepest parts of the gland, and are, therefore, only removed by operations involving complete enucleation.

Practitioner, London

October, XCV, No. 4, pp. 449-588

28 Treatment of Acute Gonorrhea. C. Gibbs.
29 Iritis. A. W. Ormond.
30 Treatment of Wounds in War. H. S. Souttar.
31 Acute Mastoiditis. W. M. Mollison.
32 Permeating Mastoiditis. J. B. Pike.
33 Nuclear Segmentation of Neutrophil Leukocytes in Health and Disease. F. E. Taylor.
34 *Dangers of Tuberculin. W. C. Wilkinson.
35 *Emetin Hydrochlorid. W. B. Robinson.
36 Valuation of Therapeutic Results. E. Hughes.
37 Vicious Circle of Habitual Constipation. J. B. Hurry.
38 Case of Traumatic Subdural Hemorrhage. H. V. O'Shea.

34. **Dangers of Tuberculin.**—The question defended by Wilkinson is that, in the hands of experts, tuberculin is not only free from the dangers which have been associated too lightly and erroneously with its administration, but is at once a valuable aid in diagnosis and an invaluable and indispensable remedy in treatment. He does not contend that it is the *ne plus ultra*, but the irresistible evidence of an experience extending over five years in hundreds of cases of tuberculosis of all forms and in all stages, leaves not the smallest doubt in his mind that an independent and impartial inquiry would disabuse the medical mind of the imaginary evils alleged to arise from its use. Such an inquiry would, in his opinion, dispel many of the errors still hindering a solution of a difficult problem, which has not yet been

approached and analyzed in accordance with the rules of logic and science, and would be the first step toward the general exploitation of tuberculin as a valuable diagnostic agent in doubtful cases of tuberculosis and as an invaluable remedy in a disease which is so widespread and so difficult to treat with success that no useful remedy should be left untried.

35. **Emetin Hydrochlorid.**—Robinson has used this drug with good results in mucous colitis, dysmenorrhea, phthisis and intestinal hemorrhage.

Bulletin de l'Académie de Médecine, Paris

September 21, LXXIV, No. 38, pp. 307-324

39 *Early Disinfection of Wounds. T. Tuffier.
40 Iron Bead in Glove Finger, Connected with Telephone, Locates Foreign Body. (Application de la balance de Hughes.) T. Tuffier.
41 Three-Day Fever Among the Troops at the Dardanelles. (Dengue d'orient.) A. Sarrailhé, P. Armand-Delille and C. Richet fils.
42 *The Gait with Artificial Legs. (Etude cinematographique de la marche chez les sujets amputés de la cuisse ou de la jambe.) Ducroquet.

39. **Early Disinfection of Wounds.**—Tuffier's remarks were summarized in the Paris Letter, p. 1473. He declares that it can never be reiterated too often that infection can be nipped in the bud, while allowed a few hours to develop and spread, it gets quite beyond our control. To nip infection in the bud, the more recent workers have found a hypertonic salt solution most effectual, thanks to its osmotic properties, but it does not check the development of the streptococcus. Tuffier himself prefers Carrel and Dakin's method applied at once and completed within twelve hours. It is proving astonishingly effectual in warding off suppuration, he says.

42. See Paris Letter, p. 1473.

Presse Médicale, Paris

September 23, XXIII, No. 44, pp. 361-368

43 *Tests of Reserve Force of the Heart. (L'aptitude militaire des cardiaques.) A. Martinet.
44 War Delirium in Typhoid. (Les délires guerriers dans la fièvre typhoide.) Devaux and Logre.
45 *Improved Technic for Serodiagnosis of Syphilis. (Une "sensibilisatrice" syphilitique thermolabile; modification de la technique de la réaction Bordet-Gengou-Wassermann.) V. Busila.
46 Severing Tendon in Treatment of Gunshot or Shell Wound. (Des sections tendineuses dans les traumatismes de guerre.) D. de Fortunet.

September 27, No. 45, pp. 369-376

47 *Phagocytosis-Enhancing Action of Magnesium Chlorid. (Cytophylaxie.) P. Delbet and Karajanopoulo.
48 Tardy Hemorrhage After Wound of Artery. (Ouverture tardive des artères dans les plaies par projectiles de guerre.) R. Grégoire.
49 Diplococcus Septicemia. (Diplococcémie.) Broquin-Lacombe and Vulquin.

September 30, No. 46, pp. 377-384

50 *Research on Antiseptics in Treatment of Infected Wounds. H. D. Dakin.
51 *Albuminuria not a Constant Sign of Meningeal Hemorrhage. E. Macris.

43. **Determination of the Reserve Force of the Heart.**—Martinet says that the ordinary methods of examination do not reveal whether the heart will be able to stand sudden stress. Some hearts, even with organic disease, are able to sustain extra strain while others apparently valid break down under it. Clinicians have grown gray, he remarks, studying this subject, but certainty has not yet been realized. The findings with various tests are subjective (dyspnea under exercise), or they are tardy (enlargement of the liver, edema, etc.), or they are not pathognomonic (oliguria, enlargement of the liver, etc.). The only exploratory means at our disposal which yield objective results are the pulse rate and the arterial tension, noting the curves for each, measured as the patient reclines, then again as he stands, and then again after a special exercise (bending the legs twenty times), and then again after reclining anew. In taking these measurements, he waits each time until two successive measures give the same figure, thus eliminating the emotional factor. The curves for the pulse and for the arterial pressure are given for a series of such tests applied to a healthy person and to one with a weak heart. With the former the pulse figures were respectively 76, 80, 96, 76 and 60, while the corresponding pulse with the weak heart was 104, 122, 148, 124 and 120. Between these extremes lies a broad field in which the figures reveal whether the heart is capable of extra effort or will break down under it, thus permitting the sifting out of the men still capable of military service although their cardiovascular system is not intact.

45. **Improved Technic for Serodiagnosis of Syphilis.**—Busila relates that syphilitic serum may contain a sensitizer that resists heating and also one that is destroyed by heat. The deviation of complement and Wassermann tests do not discriminate with sufficient precision between these two sensitizers, while the preponderance or absence of one or the other has a pronounced influence on the outcome of the tests. In order to eliminate error from this source, Busila has modified the technic and states that his method is applicable to all serums and requires only two hours or two and a half from the moment the blood is drawn. Instead of heating, to suppress the human complement, he titrates it simultaneously with the reaction. When the serum is heated this destroys the thermolabile sensitizer, and it is in the cases in which this sensitizer predominates, that the syphilis is most difficult to diagnose. Hence his modified technic is particularly useful, he declares, in cases of latent, imperfectly treated, or "nervous" syphilis.

47. **Cytophylaxis Under Magnesium Chlorid.**—Practically the same article was summarized in these columns October 23, p. 1492.

50. **Technic for Sodium Hypochlorite Disinfection of Wounds.**—The main points in this communication have already been summarized in The Journal, Oct. 2, 1915, p. 1221.

51. **Albuminuria with Meningeal Hemorrhage.**—Macris' article was summarized on p. 986, Sept. 11, 1915.

Revue Médicale de la Suisse Romande, Geneva

September, XXXV, No. 9, pp. 469-532

52 *Constitutional Iodism and Its Relation to Exophthalmic Goiter. A. Oswald.
53 The Pseudodiphtheria Bacillus. (De la résistance du bacille pseudo-diphtérique à la decoloration, moyen de diagnostic différentiel d'avec le bacille diphtérique.) Reh.
54 Bradycardia from Heart Block in Boy of 9. A. d'Espine and Cottin.
55 Trauma as a Factor in Tuberculosis. Meyer.

52. **Constitutional Iodism.**—Oswald discusses the phenomena liable to develop after administration of iodin internally, saying that the Zurich region seems to be the headquarters for this type of disturbances. They were first systematically described in Rilliet's classic work with the above title, published in 1860. The syndrome he described occurs mostly in persons over 40. Besides this, there is a syndrome which resembles exophthalmic goiter in every respect; it develops in the young, and in those who have never had any previous symptoms of exophthalmic goiter, and it usually subsides in time after suspension of the iodin treatment. The entire literature on the subject has been studied by Oswald and he relates considerable personal experiences. Everything seems to indicate that the iodin stimulates the thyroid, and possibly other glands with an internal secretion, to extra functioning. The result is thus the same as in primary exophthalmic goiter, which is now ascribed to extra functioning of the thyroid. Both syndromes are the result of an excess of thyroid secretion being poured into the circulation, and there is no reason for surprise that iodin thus can induce the true Basedow syndrome. A predisposition is necessary for both, but it is not necessary to assume for either that the thyroid is producing an abnormal secretion; an excessive amount of a normal secretion is enough to explain all the symptoms observed, given an abnormally sensitive nervous system. With iodin hyperthyroidism the nervous system is suffering from the iodin, and it recuperates when the iodin is withdrawn. With true exophthalmic goiter, the nervous system is suffering from the chronic oversupply of thyroid secretion and the nervous factor is thus both a predisposing and the provocative ele-

ment in the clinical syndrome. Recuperation is consequently more difficult.

55. **Traumatic Tuberculosis.**—Meyer relates the case of an apparently robust young man who seemed entirely healthy until a shell wound of the chest, which was followed by hemoptysis and tubercle bacilli in the sputum. There is every reason to assume that the tuberculosis might not have developed if it had not been for the chest wound, which evidently roused to virulence some latent tuberculous focus.

Berliner klinische Wochenschrift

September 20, LII, No. 38, pp. 989-1012

56 *Indications and Prognosis in War Wounds of the Nervous System. (Indikationen zu den Maassnahmen bei den Kriegsverletzungen des Nervensystems und Prognose dieser Verletzungen an sich und nach den verschiedenen Eingriffen.) L. Bruns.
57 *Influence on Metabolism of Acute Serous Meningitis in a Diabetic. L. Lichtwitz.
58 *Miostagmin Reaction in Cancer. O. Wissing.
59 Influence of Antityphoid Inoculations on Incidence and Course of Typhoid in German Army. (*Einfluss der Typhusschutzimpfungen auf die Typhuserkrankungen bei der—Armee im Herbst und Winter, 1914/15.*) A. Goldscheider and K. Kroner. Commenced in No. 36.
60 Improved Casts for Fractures. (Vorschlag zur Behandlung der Schussfrakturen im Felde.) G. Frank.

September 27, No. 39, pp. 1013-1032

61 *Sham Cysts in Spinal Meninges. (Meningeale Scheincysten am Rückenmark.) K. Bonhoeffer.
62 Serum Diagnosis of Glanders. (Zur Rotzdiagnose.) W. Pfeiler.
63 Some Judicial Decisions Affecting Physicians in Germany. (Aerztliche Rechtsfragen.) H. Lieske.

56. **Gunshot and Shell Wounds of the Nervous System.**—Bruns is consultant neurologist in the tenth German army corps, and here reviews what he has learned from study of 900 cases traced over considerable periods. The outcome in a large proportion of the cases has been favorable beyond all anticipations, even after wounds of the brain itself. He takes up in turn the injuries of the peripheral nerves, brain and skull and spinal cord and vertebrae, the disturbances from ischemia and other injury of the muscles, the cases of neurasthenia, hysteria, etc., tetanus and other diseases of the nervous system, and cases of aggravation or simulation of such, and the indications for treatment based on these experiences.

57. **Influence of Intercurrent Febrile Diseases on Diabetes.**—The diabetic man of 26 had been able to stand the stress of the campaign for a time, but the lack of proper diet brought weakness and loss of thirty pounds in weight. Then came a mild typhoid and during convalescence febrile serous meningitis developed. Under the influence of the fever and loss of appetite he received only 30.2 calories per kilogram of weight while the output of sugar rose abruptly to such a height that only 19.2 calories remained to be utilized. There must have been destruction of 189 gm. of albumin.

58. **The Miostagmin Reaction in Malignant Disease.**—Wissing has applied the stalagmometer in 115 cases to ascertain the changes in the drop-forming property of the serum in various pathologic conditions. He has modified Ascoli's original technic for this miostagmin reaction by refraining from heating the serum. The reaction is more reliable at room temperature, and the findings during the first hour are the criterion. The reaction is not specific for cancer, but none of the other conditions in which it is likewise positive are liable to be confounded with cancer, except possibly when there is jaundice. The reaction is always positive with the latter, but it disappears with the cholemia, while in malignant disease it persists without change. The miostagmin reaction was found constantly negative in conditions difficult to differentiate from cancer, such as benign tumors, gastric ulcer, chronic inflammation of the stomach or bowel, leg ulcer, afebrile surgical tuberculosis, chronic inflammatory conditions in the female genital organs, and syphilis.

61. **False Cysts in Spinal Meninges.**—Bonhoeffer relates the details of two cases of spinal-cord trouble in which the discovery of cysts in the pia and arachnoid apparently explained the disturbances. But the lack of any benefit from their evacuation and other circumstances justify the assumption that the cyst-like protuberances had developed casually in the course of the laminectomy, in consequence of the abnormal pressure in the subdural space, and had not existed before. In any event they had nothing to do with the previous clinical picture. The actual disease of the spinal cord has progressed since, unmodified by the laminectomy and draining of these sham cysts. Necropsy in one case further confirmed these views.

Correspondenz-Blatt für Schweizer Aerzte, Basel

September 25, XLV, No. 39, pp. 1217-1248

64 Varieties of the Babinski Toe Reflex and Their Import in Diagnosis. R. Bing.

Deutsche medizinische Wochenschrift, Berlin

September 23, XLI, No. 39, pp. 1145-1176

65 *Action of Morphin on the Diseased Heart. (Die fördernde Wirkung des Morphiums auf die heterotope Reizbildung im Herzen.) H. E. Hering.
66 Bacteriotherapy of Puerperal Infections. III. R. Kraus and S. Mazza.
67 Technic for Bacteriologic Diagnosis of Typhoid. (Die Verwertbarkeit der "Schragagarröhrchen-Typhus-Diagnose.") K. Halbey.
68 Collective Inquiry on the Question of Sexual Abstinence. A. Neisser.
69 Specificity of the Abderhalden Reaction. E. Herzfeld.
70 Radiotherapy of Lupus and Other Tuberculous Disease of the Skin. (*Hohensonnenbehandlung tuberkulöser Erkrankungen der Haut.*) G. A. Rost.
71 *"Scrofula." (Wesen und Behandlung der Skrofulose.) H. Schelble.
72 Localization of Foreign Bodies. (Einfacher Apparat zur Ortsbestimmung von *Fremdkörpern.*) *H. Günther* and G. Vogel.
73 **Improved Technic for Hospital Construction and Ventilation.* (Einige Ratschläge für den Bau von *Krankenhäusern.*) W. Block.

65. **Action of Morphin on the Heart.**—Hering discusses the experimentally demonstrated fact that morphin in large doses, by increasing vagus tonicity, may indirectly induce a heterotopic impulse for the heart action, that is, induce ventricle automatism. The effect of the morphin varies as the heart is sound or diseased, the pathologic heart responding more readily. Hence extra caution is necessary when giving morphin in cases with a tendency to abnormally located impulse production. The sudden onset of fibrillation is a reasonable explanation in many cases of an immediately fatal attack of angina pectoris, and morphin, by promoting the tendency to fibrillation, that is, to heterotopic impulse production, may prove a factor in the fatal outcome. At the same time, he warns that the valuable aid from morphin in angina pectoris should not be discarded, but only that the dosage should be supervised with special care. He remarks parenthetically that the action of drugs on animals has been studied too exclusively on healthy animals. Diseased organs respond more readily to smaller doses.

71. **"Scrofula."**—Schelble discusses the old conception of scrofula, showing that when one has eliminated from it tuberculous affections of the skin, soft parts, bones and lymph glands, there is nothing left of the "scrofula" syndrome but the facies scrophulosa. This, he asserts, belongs to the exudative diathesis, and it is still a question whether tuberculosis is involved in this or not. Clinical experience seems against it. The cases should be designated as the exudative diathesis in connection with measles, with vaccination, with catarrhal infection, or the like. This affords insight into the individual cases and promotes causal treatment. The fine results obtained by treatment of the exudative diathesis and the provocative factors, ignoring the hypothetic tuberculosis, testify to the correctness of the above assumption, especially in cases of conjunctivitis with phlyctenas. All observers agree that signs of the exudative diathesis are manifest in all cases of phlyctenous conjunctivitis, and that the exudative diathesis is always in a severe form. It is hard to explain, however, why the phlyctenas develop so late, later than the other manifestations of the exudative diathesis, sometimes not until long after puberty. In these cases tuberculosis may be the provocative factor. It would be interesting to learn whether the phlyctenas are more rebellious to treatment in the cases with a positive response to tuberculin than without. The treatment is discussed in detail and the point emphasized that when the exudative diathesis

is known to exist, every aggravation of the condition should be early recognized and appropriate measures enforced. By the exudative diathesis he means Czerny's original clinical picture, confirmed in thousands of cases, the congenital anomaly consisting in a tendency to exudation in the skin and mucosa, plus hyperplasia of the lymphoid organs, without tuberculosis as a primary factor. He warns against attempts to remove the enlarged glands in the neck even when they are known to be tuberculous. They are frequently secondary to pathologic changes in the mouth or tonsils and retrogress under appropriate treatment of the latter. If the lymphoma has softened it will heal under a mere incision. Only when the suppuration involves adjacent tissues is more of an operation required. Many of the leading surgeons now denounce all attempts at operative removal of enlarged glands in the neck and commend conservative measures, including radiotherapy. Rollier's fine results with heliotherapy conservative treatment bring to mind the tragic histories of recurrence after extensive operative procedures.

73. **Construction of Hospitals.**—Block gives a number of practical suggestions which were carried out in the construction of a large hospital at Hannover and have proved their usefulness during the year since the hospital has been in service. The floors are made of asphalt and covered with cork linoleum. Various advantages are claimed for this combination, including superior elasticity, waterproof properties and that the linoleum can be laid twenty-four hours after the asphalt has been applied. Sheets of cork on both sides of the wall effectually deaden the sounds between adjoining rooms. The ventilation contrivance found practical and serviceable is to have double windows, each with a cover opening inward. The cold air entering low down in the outer window is warmed by a radiator below and rises to emerge through the broad opening high up in the inner window. The radiators should not be too far apart, and their surface should be smooth to facilitate keeping them clean. For the same reason they should stand a few inches from the wall. Soiled clothes shafts disseminate odors, and it is much better, he insists, to collect the linen in airtight metal cans.

Medizinische Klinik, Berlin

September 19, XI, No. 38, pp. 1039-1064

74 *Experiences with Typhoid Among the Troops. (Erfahrungen und Gedanken über Typhus und Typhusbehandlung im Felde.) A. v. Hecker and C. Hirsch.
75 Gas Phlegmons in the Wounded. P. Sackur. Commenced in No. 37.
76 Relapsing Fever. (Rückfallfieber.) L. v. Korczynski. Concluded in No. 39.
77 Paralysis of Abdominal Muscles with Acute Anterior Poliomyelitis. (Zur Frage der Bauchmuskellähmungen bei Heine-Medinscher Krankheit.) K. Halbey.
78 *Serotherapy in Epidemic Cerebrospinal Meningitis. M. Kurak.

74. **Typhoid Among the Troops.**—In the typhoid service in charge of Hirsch and Hecker the mortality was only 5.4 per cent. excluding the cases suffering from long transportation, and 7.4 per cent. including all the cases. Saline infusion rendered valuable service; also systematic ingestion of salt. Some of the more seriously sick, with recurring collapse, were given 200 or 300 injections (camphor, caffein, digitalis) and finally recovered, without displaying any signs of drug intoxication. The main point is ample nourishment plus careful supervision of the heart and vasomotors. The severer cases were in men who had been inoculated against typhoid while they were in the incubation stage. The course of the disease was milder, the longer the interval since the last inoculation. Another rule which seemed to prevail also was that relapses were more numerous the milder the primary disease. The fever curve in the inoculated seems to lose its characteristic features.

78. **Serotherapy of Meningitis.**—Kurak reports from Vienna that in seventy-five cases of epidemic meningitis in the last thirteen years, forty-three were treated by serotherapy and the proportion recovering jumped from 31 to 56 per cent.; all but 39 per cent., however, were left with some permanent defect. The dosage of the antiserum had been small, the maximum 60 c.c. In the last series of twenty cases the doses were materially increased. These cases are described in detail to emphasize the far better results obtained when the serotherapy is begun early and when three or four injections of 80 c.c. each are made (40 c.c. intralumbar and 40 c.c. intramuscular) on successive days. All recovered of the six given from 160 to 300 c.c., although one was left with deafness. In the total twenty cases, there were six deaths (33.3 per cent.).

Monatsschrift für Geburtshülfe und Gynäkologie, Berlin

October, XLII, No. 4, pp. 287-388

79 Technic for Obstetric Internal Examination; One or Two Fingers? (Zur Frage der inneren Untersuchung mit einem oder zwei Fingern.) B. S. Schultze.
80 *Roentgen Measurement of the Pelvis. (Zur röntgenologischen Beckenmessung.) E. Runge and E. Gruenhagen.
81 *Dystocia from Deformity of the Uterus. (Geburtsstörungen durch Entwicklungsfehler der Gebärmutter.) T. H. Van de Velde.
82 *Loosening Up and Rupture of the Symphysis. E. Kehrer.
83 Management of Laceration of the Cervix During Delivery. (Intermediäre Trachelorrhaphie als Prophylaktikum gegen die mitunter auftretenden unangenehmen Erlebnisse infolge von Cervixrissen.) *H. J. Boldt (New York).*

80. **Roentgen Estimation of Measurements of Pelvis.**—Runge and Gruenhagen think they have solved the problem of measuring the diameters of the pelvis by a stereoscopic Roentgen technic which they describe in detail. The patient lies comfortably flat on her back. The tube is slightly displaced for the second, the stereoscopic, picture, but the impression from both negatives is taken on a single sheet of paper, and the measurements are calculated by an algebraic or geometric formula. They give a table with the measurements computed for the different figures usually obtained, and state that the method ensures absolute accuracy, or at most an error of a small fraction of a millimeter. They have had no opportunity to test the method on women since they have completed their computations, but have found it absolutely correct on men; some of them were examined postmortem and the figures obtained were identical with the computed findings or varied only from four to six tenths of a millimeter.

81. **Abnormal Childbirth from Defective Development of the Uterus.**—Van de Velde discusses the various forms of double uterus in their bearing on delivery at term, and also dystocia from defective development of the uterus, or from congenital deformity of the cervix. The uterine musculature is liable to be weak, the cervix rigid and the axis of the fetus and uterus slant in respect to the pelvic inlet. This combination readily explains the rupture of the uterus in certain rare cases. The diagnosis in these abnormal conditions is misleading; in Tissier's case external version had been done and the placenta separated by hand without suspicion that the uterus was double, until this was revealed by the laparotomy. In a personal case described the fetus had developed to term in a double uterus which had no opening into the vagina in the gravid half. The finger could be introduced into the empty other half and the child was safely delivered by vaginal cesarean section. The woman passed through several pregnancies later, twice in the other half and once in this, but none developed to term. Tuberculous peritonitis followed in later life and compelled laparotomy before recovery, and the anatomic conditions were minutely inspected. The few somewhat similar cases on record are compared with this case, but no answer is suggested for the question why this half of the uterus with atresia permitted conception although it had never apparently participated in menstruation. After the artificial opening had been made, menstrual hemorrhages issued from it as regularly and normally as from the normal half.

82. **Rupture of the Symphysis.**—Kehrer has compiled quite an extensive literature on rupture of the symphysis during delivery, and gives the details of 100 cases. He adds to the series a case personally observed. The patient was a previously healthy tertipara with contracted pelvis. Her children had all been stillborn and the high forceps had been applied repeatedly at this time, with external impression of the head into the pelvis, the woman in Walcher's position. On failure of the high forceps again, perforation and cranioclast extraction at once had been planned, but the symphysis ruptured

during the high forceps. The urethra was torn loose and slit almost its entire length, and the neighboring ligaments were also torn. The sound of the tearing was audible and unmistakable, and a gap over an inch wide could be felt in the symphysis. The head came through at once, and the bleeding in the region of the rupture was arrested by tamponing. The patient died sixteen days later from embolism in the pulmonary artery. In conclusion Kehrer summarizes fourteen cases of traumatic rupture of the symphysis, all but one in men.

Three degrees of rupture of the symphysis have been observed; partial rupture of the ligaments, occurring during delivery and, exceptionally, during pregnancy; complete rupture occurring acutely during delivery or supplementing a previous partial rupture. The third type of rupture is that from overstretching and loosening up of the symphysis ligaments, with or without gaps in the cartilage. The result is a kind of flail joint, developing during a pregnancy or returning in successive pregnancies. A distinct noise is usually heard, and the woman feels as if something had torn. The sound is made mostly by air rushing in as the vagina is torn. When this does not occur and the symphysis ruptures while the woman is under the influence of an anesthetic, the cause for the pains and tenderness in the region may not be suspected for days. The sudden dropping down of the fetus' head is characteristic, and the skin over the symphysis can be pressed down in the form of a long groove. The gap is most evident, however, on palpation through the vagina. After rupture of the symphysis the legs turn outward, so that the knees and feet lie on their outer side. Tearing of the urethra and bladder complicate the rupture at times beyond repair. Gangrene of the foot was observed in one case; fatal embolism in two, and in a few cases bone or cartilage sequesters were expelled months afterward. The ultimate outcome is about the same as after subcutaneous symphysiotomy.

The obstetrician cannot be held responsible for the rupture unless possibly in most exceptional cases of application of extreme force, and then only presumptively, as the records show that such ruptures have occurred with spontaneous births, also spontaneously during pregnancy and delivery, and during delivery under the hands of the most experienced obstetricians. Even when the physician fails to recognize the rupture, and fever and other symptoms develop, these may be masked by puerperal fever or parametritic exudates. A partial rupture during delivery may become complete days or weeks later. It is not always easy to determine whether suppuration at the symphysis is the result of rupture during labor or a puerperal metastatic process. The patient must be kept absolutely still on her back; if the gap is not large it may grow up in two weeks. At future deliveries, conditions favoring rupture must be avoided. The pelvis must be held up with a supporting band and spreading of the knees avoided.

Münchener medizinische Wochenschrift, Munich

September 21, LXII, No. 38, pp. 1277-1308

84 Agglutination in Diagnosis of Typhoid in the Inoculated. (Wert der Agglutinationsprobe bei Typhusgeimpften.) E. Reiss.
85 Open Puncture of the Pleura. A. Schmidt.
86 Gunshot and Shell Wounds of the Joints, and Treatment. (Gelenkverletzungen, Gelenkeiterungen und ihre Behandlung.) E. Payr. Concluded in No. 39.
87 Antitoxin Found in Serum during and soon after Tetanus. C. T. Noeggerath and E. Schottelius.
88 Harmlessness of Antityphoid Vaccination. (Unschädlichkeit der Typhusschutzimpfungen.) E. Laqueur.
89 *Futility of Disinfecting Field of Operation as a Rule. (Wert der Desinfektion des Operationsfeldes.) M. zur Verth.
90 *Open Treatment of Gunshot and Shell Wounds. (Offene Wundversorgung.) Härtel.
91 Anamnesis of So-Called War Psychoneuroses. R. Laudenheimer.
92 Medicomechanical Appliances to Use in Bed. Fuchs.
93 Roentgenoscopy of Gas Phlegmons. B. Döhner.
94 Partial Amputation of Foot According to Sharp. A. Harf.
95 Amputation Technic. Merkle.
96 Handkerchiefs as Sources of Infection of Others. (Zur Vorbeugung der epidemischen Genickstarre.) J. Petruschky.

89. **Disinfection of Field of Operation.**—Zur Verth declares that before disinfection can be done there must be infection and it is by no means certain that the skin of the field of operation is already infected. As a rule this is not the case, and hence measures to disinfect are superfluous and do merely harm. It is better, he insists, to omit this alleged disinfection of sound skin until we have some method for disinfection which is actually harmless. Wounds with much destruction of tissue require mechanical disinfection. The iodin technic represents progress as it simplified and crowded out more harmful measures. But the experience in this war has shown that the iodin is far from harmless. He adds that, while denouncing our present methods of chemical disinfection, he still emphasizes the dire importance of contact infection.

90. **Open Treatment of Wounds.**—Härtel is enthusiastic over the advantages of leaving wounds open to the air, merely covering them with a single layer of gauze to keep flies away and veil the lesion. The gauze is held up by a light wire support, the "wire butterfly," and the patients are grateful that they are spared the painful changes of dressings, while the physician appreciates it as he can thus keep the lesion under his eye all the time. There is no odor from the lesion. It is indispensable, however, that the limb should be immobilized. This leaves the organism free to devote all its energies to repair, and it does this without requiring the aid of chemicals.

Zentralblatt für Chirurgie, Leipzig

September 25, XLII, No. 39, pp. 705-720

97 Walking Prothesis after Amputation. O. Orth.

October 2, No. 40, pp. 721-736

98 Temporary Gastrostomy for Draining the Stomach in Ileus. (Ueber Magendrainage durch Gastrostomie.) G. Nyström (Stockholm).

Zentralblatt für Gynäkologie, Leipzig

September 25, XXXIX, No. 39, pp. 683-698

99 External Version with Placenta Previa. (Einiges zur Kritik der von Zalewski empfohlenen Steisstherapie der Placenta praevia.) W. Hannes.

October 2, No. 40, pp. 699-714.

100 Mechanism for Inhibition in Urogenital Apparatus. W. Benthin.

Brazil-Medico, Rio de Janeiro

September 15, XXIX, No. 35, pp. 273-280

101 Leprosy in Form of Syringomyelia. J. Candido.

Hospitalstidende, Copenhagen

September 22, LVIII, No. 38, pp. 949-980

102 Tetanus in Boy of 4; Recovery under Serotherapy and Magnesium Sulphate. J. Nordentoft.

September 29, No. 39, pp. 991-1014

103 *Differential Diagnosis of Leukemic and Leukemoid Blood Pictures; Four Cases. H. Buhl. Commenced in No. 38.

103. **Differential Diagnosis of Leukemic Blood Picture.**—Buhl gives the minute details of four acute cases suggesting a generalized disease of the blood-producing apparatus. He compares them with the classic types, and discusses the views of various clinicians on the leukemic and leukemoid blood pictures. The article is illustrated. In each of his four cases the blood picture was that of one-sided neutrophil leukemia, but the numbers of leukocytes never reached the typical leukemic figure. The cases, thus, were of the transitional type between simple neutrophil leukocytosis and true leukemia. The patients were young men of 19 and 21 and two women of 24 and 25. The necropsy findings in two of the cases are also given. Death occurred after the first symptoms in nineteen days in one case, but the intervals were longer in the others. Radiotherapy seems to be contraindicated in primary "neutroleukemia," as a change in the blood picture to this type in true leukemia under benzol, radium or Roentgen treatment is generally regarded as a signal warning to suspend these vigorous measures. Benzol was tried in two of the cases here reported, but the results discourage further attempts in this line. In any event, one is on the safe side in taking the behavior of the eosinophils as a guide in treatment, in connection with large numbers of leukocytes. Subleukemic leukocyte figures may occur likewise with complications (sepsis), during remissions of leukemia, and under the influence of treatment.

Hygiea, Stockholm

LXXVII, No. 17, pp. 961-1024

104 Some Attempts to Produce Exophthalmos Experimentally. (Några försök att på experimentell väg framkalla exoftalmus.) A. Troell.
105 Pneumothorax after Exploratory Puncture in Typhoid. I. Holmgren and S. Orell.
106 Local Abscess Five Months After Injection of Friedmann's Anti-Tuberculosis Vaccine. K. Frumerie.

Norsk Magazin for Lægevidenskaben, Christiania

October, LXXVI, No. 10, pp. 1177-1304

107 *Research on Heredity in Norway. (Arvelighetsundersøkelser i Norge.) K. Bonnevie.
108 Syphilis Contracted Anew for the Third Time. R. Krefting.
109 The New Ophthalmologic Clinic at Christiania. (Rikshospitalets øienklinik.) H. Schiøtz.

107. **Research on Heredity.**—Bonnevie devotes nearly fifty pages to a study of various families in Norway showing inheritance of anomalies such as polydactylism, harelip, hemophilia, twin births or dwarf growth. His work to date is fragmentary, he admits, and is mainly to stimulate interest in the subject. He says that conditions in the families of Norway permit such research through several generations better than is possible elsewhere. The large families and the stable residence in remote hamlets facilitate the tracing of Mendel's laws of heredity. He urges that research of this kind should be planned to be carried on through future generations. Material should be accumulated now to serve as the bases for research workers ten or twenty years from now, and still later. The family trees he here presents will be far more significant when carried on further after an interval of twenty years. Cooperation between physicians and biologists is necessary for this, and the work must be organized and correlated. He suggests a central headquarters for the purpose, a heredity institute, to which single reports from different districts can be made, and where the data can be classified and correlated. He adds that Lundborg has already done considerable work in this line in Sweden; studying the hereditary development of myoclonus-epilepsy in certain rural families. His charts, published in 1913, embrace 2,232 persons in the Blekinge province; the myoclonus-epilepsy is shown to be recessive.

Ugeskrift for Læger, Copenhagen

September 16, LXXVII, No. 39, pp. 1545-1570

110 *Practical Suggestions for Sanatorium Treatment. N. J. Strandgaard.
111 *A Portable "Dark Room." (Et transportabelt Mørkekammer.) K. K. K. Lundsgaard.

110. **Practical Points in Sanatorium Treatment.**—Strandgaard draws some practical conclusions from his experience at the Boserup sanatorium in Denmark. He reiterates that a sanatorium is a combination of a hospital and a rural health resort, and would still maintain its usefulness even if a specific cure for tuberculosis should be discovered. Nowhere else could it be applied to such effect. He makes no attempt at overfeeding, merely striving to bring the patient's weight up to the standard of the life insurance tables. It generally soon reaches this spontaneously, and keeps there. He says that percussion and auscultation do not require complicated instruments or methods; the simplest are the most instructive. The main thing is to examine exactly symmetrical points, the patient sitting on a high stool without a back, and told to cough lightly as each point is auscultated. The stethoscope should be applied systematically at successive points; he enumerates a series of six regions in front, nine at the back and three at the side to be auscultated in turn. For recording the findings he lauds Bang's system of signs; the principles can be learned in five minutes, and several years' experience has confirmed the practicability and great value of the method. It saves fully an hour's work each day in the sanatorium. In comparison with Sahli's and other systems of signs, he has found the Bang method much more of a time-saver.

The prognosis of tuberculosis depends, he declares, on the benign or virulent character of the infection even more than on the stage it has reached. The patient's carelessness, abuse of alcohol, or similar accidental factors explain the recurrence in many cases. One young man, dismissed as clinically cured, had recurrence of trouble after a serious bicycle accident. In several other cases the family did not appreciate the necessity for sparing the recently "cured" patients and set them to hard physical labor which soon brought recurrence, as also return to unhygienic occupations or home privations. These points are familiar to all but can never be reiterated too often, as also the pernicious influence of worry and care. A fracture heals whether one is happy or sad, but psychic factors may turn the scale with a tuberculous process in the lung. In some cases related the patients' homesickness counteracted the benefits of sanatorium treatment; in others, under grief at the death of some member of the family, or fear of scandal, the lung process flared up anew. In another case a young man worried over his wife's approaching confinement and long failed to benefit from the sanatorium treatment. His condition began to improve as if by magic after the baby came. Emotional factors are particularly potent for good or ill in women, both young and old.

111. **Portable Dark Chamber.**—Lundsgaard has found very useful for ophthalmoscopy in the sickroom and elsewhere a dark chamber contrived from an umbrella made with a deep curtain all around. An illustration is given of the one he uses.

Upsala Läkareförenings Förhandlingar

May 31, XX, No. 5, pp. 271-330

112 The Blood Pressure in Cats after Nephrectomy and Excision of Part of Remaining Kidney. (Blodtryckets förhållande efter njurexstirpation och njurresektion.) E. L. Backman.
113 Oxygen Tension in Body Fluids of Sea Anemone. (Om syrgasens tension i kroppsvätskan hos Coelenterater i fritt tillstånd i hafvet och efter vistelse i akvarium.) E. L. Backman.
114 Principles for Correction of Astigmatism. J. W. Nordenson.

September 8, No. 6-7, pp. 331-385

115 *Comparison between the Sugar Content of the Blood under Oral and Rectal Intake of Dextrose. (En jämförelse mellan blodsockerhalten vid oral och rektal tillförsel af dextros.) G. Jahnson-Blohm.
116 *Importance of Exposure to Tuberculosis during Childhood. (Till frågan om betydelsen af den tuberkulösa expositionen under barnaåldern.) A. Wallgren.
117 Technic for Bloodless Determination of the Blood Pressure in Animals. (Till tekniken vid oblodig blodtrycksmätning på djur.) E. L. Backman.
118 Shape of the Lower Jaw in Man. (Bidrag till kännedomen om underkäkens typologi hos människan.) G. Backman.

Supplementary Number

119 Food of the Populace in Germany during the War. (Om folknäringsfrågan i Tyskland under kriget.) O. Hammarsten.

115. **The Sugar Content of the Blood after Oral and after Rectal Intake of Dextrose.**—Blohm's tests were made on three healthy men of 24 and two diabetic men of 44 and 73. They took 10 gm. of dextrose by the mouth, or were given 30 gm. by rectal injection, all in an isotonic solution. These amounts were given at a single dose or fractioned. The sugar content of the blood rose at once after ingestion of the dextrose by the mouth, both in the diabetics and in the healthy, but no increase was perceptible in either after the rectal injection of the sugar. There seems to be thus some marked difference in the behavior of sugar in the body according as it is absorbed by the upper or lower bowel. The fact of the absorption by the rectum was established beyond question, but the cause of its different behavior after absorption at this point is still a mystery.

116. **Exposure to Tuberculosis as a Factor in Tuberculosis Later.**—Wallgren found a history of tuberculosis in the family before the age of 15 in 51 per cent. of 100 tuberculous persons, and in 13 per cent. of 100 healthy, all under the age of 40. A history of exposure to tuberculosis before the child was 5 years old was ascertained in 15 per cent. of the tuberculous and in only 1 per cent. of the healthy. Among the 100 tuberculous one or both parents had been tuberculous in 27 per cent.; a brother or sister in 6 per cent., and other relatives in 11 per cent. Among the 100 healthy persons only 2 per cent. had a history of a tuberculous parent; 2 per cent. had a tuberculous brother or sister, and 3 per cent. other relatives. The sexes were represented about equally in both series.

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ELECTIVE LOCALIZATION OF STREPTOCOCCI [*]

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The general systemic distribution of micro-organisms in certain diseases with a localized focus is well established, but the factors which determine the localization of bacteria after they gain entrance into the circulation are obscure.

In this paper I wish to record a summary of the results obtained from the intravenous injection, under a standard technic, of streptococci isolated from appendicitis, ulcer of the stomach and duodenum, cholecystitis, rheumatic fever, erythema nodosum, herpes zoster, epidemic parotitis, myositis and endocarditis, and to discuss the bearing of these results on localization of streptococci.

TECHNIC

The streptococci were usually grown from sixteen to twenty-four hours at 37 C. in tall columns of ascites (10 per cent.) dextrose (0.2 per cent.) broth (0.6+ to 0.8+) to which sterile tissue (guinea-pig kidney or heart muscle) was often added; the sterility of the ascites fluid and broth containing the tissue was always proved beforehand. After incubation smears were made, the cultures were centrifuged in the containers in which they were cultivated,[1] the supernatant fluid was decanted and the sediment suspended in sodium chlorid solution so that 1 c.c. of the suspension contained the growth from 15 c.c. of broth. The doses for rabbits (ear vein) were usually from 0.5 to 3 c.c., and for dogs (leg vein) from 1 to 5 c.c. of this suspension. The injections were made quite rapidly through a rather fine needle (22 gage), usually within an hour after the suspension was made. Blood agar plate cultures were made at the time the suspensions were injected to study the character of the organisms, to test their viability and to save them from further study. This is an important precaution because negative results have at times proved to be due to early death of the recently isolated organisms in the broth cultures. In the accompanying table, "when isolated" indicates the first or second and, occasionally, the third or fourth cultures, or the first culture after one animal passage. "Later" indicates that the strains were cultivated for a week or longer. "After animal passage" indicates usually from the second to the sixth animal passage.

The strains tested from appendicitis, ulcer of the stomach, cholecystitis, rheumatic fever, erythema nodosum, myositis and endocarditis include strains isolated from the characteristic lesions as well as from the apparent atrium of infection. Those from herpes zoster were from the tonsils and spinal fluid, and those from epidemic parotitis were obtained by catheterizing Steno's duct and from the tonsils. The strains from miscellaneous sources were usually from tonsils approaching the normal condition; and the laboratory strains were streptococci or pneumococci cultivated on artificial mediums for a long time and had lost all apparent virulence. The figures in the lowest line of the table represent the average percentage incidence of lesions in individual organs following injection of various strains of streptococci except those from the specific disease. Thus the first figure indicates that 5 per cent. of the animals, injected with the various strains except those from appendicitis, showed lesions in the appendix.

Care was exercised to obtain growths from the depths of the supposed primary focus with as little contamination from the surface as possible, the cultures being made from the material expressed from the tonsils or from emulsion of extirpated tonsils after thorough washing in sodium chlorid solution. The material from the depths of pyorrheal pockets was obtained by means of a pipet.

For the study of pathogenicity of the cultures, dogs and rabbits were chiefly used, being killed with chloroform at the desired time, usually in from twenty-four to forty-eight hours. Postmortem examinations were always made as soon after death as possible. A thorough inspection in a bright light with the unaided eye or with the aid of a hand lens was made for focal lesions. The exact character of the lesions and the presence of the streptococci in each of the various diseases have been determined by microscopic study of sections. Cloudy swelling is not included in the results given in the table. Hemorrhage, localized necrosis, exudation and infiltration were the usual lesions. Thus, in case of the joints, hemorrhage about the joint or turbidity of fluid, as determined with a pipet, or both, were considered as evidence of arthritis. Hemorrhages in the pericardium and turbidity of pericardial fluid, due to leukocytes, were considered as evidence of pericarditis. The postmortem study of animals often symptomless is essential to obtain accurate knowledge of the pathogenicity of a culture, and must supplant the older method of merely finding out whether a culture produces death or not, a method still too much in vogue. The table includes data only from those animals in which the postmortem was comprehensive, and does not include some of the earlier experiments, especially on endocarditis.

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[*] From the Memorial Institute of Infectious Diseases, Chicago, and the Mayo Foundation, Rochester, Minn.

[1] The common 8-ounce nursing bottle is used both as a culture flask and centrifugal tube, and serves the purpose admirably.

Increase in mortality rate, earlier death and greater degree and distribution of lesions following standard dosage were considered as proof of high virulence. Changes in the spleen and liver were so rare following injection of the strains as isolated, except those from cholecystitis, that they are not included in the table. Acute splenitis and such changes in the liver as focal necrosis, parenchymatous and bile duct hemorrhages and acute degeneration with marked acidity occurred, however, after the strains had acquired greater virulence from animal passage. In the earlier experiments not sufficient attention was paid to the occurrence of lesions in the thyroid, thymus, suprarenals and lymphatic glands. Later a closer search for lesions in these structures was made, especially after it was found that lesions in the thyroid followed intravenous injection of bacteria isolated from goiter. It must be said, too, that strains of streptococci from rheumatic fever, myositis and cholecystitis produce hemorrhages in the thyroid quite commonly, while those from other sources rarely produce them.

ELECTIVE LOCALIZATION OF STREPTOCOCCI

Source of Streptococci		Strains (220)	Animals Injected (833)	Percentage of Animals Showing Lesions in																	
				Appendix	Stomach	Duodenum	Gallbladder	Pancreas	Intestines	Joints	Endocardium	Pericardium	Myocardium	Muscles	Kidney	Lung	Skin	Tongue	Eye	Parotid
					Hemor.	Ulcer														
Appendicitis	When isolated	14	68	68	6	1	1	0	9	29	21	0	9	12	0	0	0	0	3	0
	Later	8	26	15	19	15	4	0	0	22	19	0	12	23	0	0	0	0	0	0
	After animal passage	7	22	45	45	30	40	0	20	36	20	0	20	25	10	0	0	0	0	0
Ulcer of stomach in man	When isolated	18	103	2	60	60	20	3	7	16	12	4	5	0	5	0	0	0	0	0
	Later	8	22	5	5	0	5	0	0	18	14	0	0	0	0	0	0	0	0	0
	After animal passage	7	39	0	23	33	30	15	15	21	5	0	3	3	8	15	0	0	0	0
Cholecystitis	When isolated	12	41	0	29	15	80	5	17	17	10	0	2	7	5	5	2	0	0	0
	Later	5	14	14	28	14	7	0	0	21	14	0	0	0	7	0	0	0	0	0
	After animal passage	4	16	0	31	13	56	19	13	25	19	0	13	0	13	6	0	0	0	0
Rheumatic fever	When isolated	24	71	8	23	18	3	3	13	66	46	27	44	27	39	4	6	0	10	0
	Later	8	14	0	14	21	0	0	0	21	21	0	28	0	21	0	0	0	0	0
	After animal passage	5	19	21	37	21	5	21	0	37	53	32	37	16	42	21	0	0	11	0
Erythema nodosum	When isolated	6	20	0	10	0	0	0	5	20	20	10	0	35	10	5	90	0	5	0
	Later	3	9	0	22	0	11	0	0	11	11	0	0	0	0	0	22	0	0	0
	After animal passage	6	14	0	21	0	50	0	7	50	14	7	14	50	7	43	43	0	0	0
Herpes zoster	When isolated	11	61	10	29	8	16	2	8	11	5	11	5	11	5	21	70	15	15	0
	Later	6	15	0	13	7	7	13	7	60	7	0	20	40	7	20	7	0	13	0
	After animal passage	4	7	0	28	10	0	0	0	43	0	14	0	28	0	43	28	14	0	0
Mumps	When isolated	9	19	15	21	5	21	42	10	42	15	0	37	3	5	15	15	0	0	73
	Later	5	8	12	0	0	0	12	12	24	24	0	12	12	0	12	12	0	0	24
Myositis	When isolated	3	40	2	4	10	2	7	7	20	10	0	35	75	2	0	7	0	8	0
Endocarditis	When isolated	8	44	0	7	0	5	0	15	15	84	4	20	0	20	20	2	0	0	0
Miscellaneous	When isolated	34	41	3	17	0	4	0	4	17	20	0	15	7	7	7	0	0	0	0
"Lab." strains	Before and after animal passage	5	100	2	18	5	2	2	2	45	49	0	15	12	10	17	2	0	6	0
Average percentage of animals injected with nonspecific strains showing lesions in individual organs				5	20	9	11	6	8	27	14	2	10	12	9	11	2	1	3	0

RESULTS

A study of the table shows that streptococci from the various diseases often have a most striking affinity or tropism for the organs or tissues from which they are isolated. Thus, fourteen strains from appendicitis produced lesions in the appendix in 68 per cent. of the sixty-eight rabbits injected, which is in marked contrast to an average of only 5 per cent. (given in lowest line of table) of lesions in the appendix in the animals injected with the strains as isolated from sources other than appendicitis. Eighteen strains from ulcer of the stomach or duodenum produced hemorrhages in 60 per cent. and ulcer of the stomach or duodenum in 60 per cent., a combined total of 74 per cent. of the 103 animals injected, in contrast to an average of 20 per cent. hemorrhages and 9 per cent. ulcer following injection of other strains. Twelve strains from cholecystitis produced lesions in the gallbladder in 80 per cent. of the forty-one animals injected, in contrast to an average incidence of lesions here of only 11 per cent. with the other strains. Twenty-four strains from rheumatic fever produced arthritis in 66 per cent., endocarditis in 46 per cent., pericarditis in 27 per cent., and myocarditis in 44 per cent. of the seventy-one animals injected, in contrast to an average of arthritis in 27 per cent., endocardial lesions in 14 per cent., pericarditis in 2 per cent. and myocarditis in 10 per cent. of the animals injected with strains from sources other than rheumatic fever. Six strains from erythema nodosum produced lesions of the skin in 90 per cent. of twenty animals injected, in contrast to an average of 2 per cent. in the animals injected with the strains from sources other than erythema nodosum and herpes zoster. Eleven strains from herpes zoster produced herpetiform lesions of the skin, lips, tongue or conjunctivae in 77 per cent. of the sixty-one animals injected, in contrast to the average of only 1 per cent. of what seemed to be herpes of the skin with the other strains. Nine strains of streptococcal organism from epidemic parotitis produced lesions in one or both parotid glands in 73 per cent. of the nineteen animals injected intravenously, in contrast to no instance of lesions here with the other strains. Three strains from cases of true myositis produced myositis in 75 per cent. and myocarditis (chiefly of the right ventricle) in 35 per cent. of the forty animals injected, in contrast to an average of myositis of 12 per cent. and myocarditis of 10 per cent. following injection of strains from sources other than myositis or rheumatic fever; and eight strains of *Streptococcus viridans* from chronic septic endocarditis produced lesions in the endocardium in 84 per cent. of the forty-four animals injected, in contrast to an average of 15 per cent. with the strains other than those from endocarditis. The results following injection of the miscellaneous strains (usually the first culture from tonsils) and the laboratory strains serve as a basis of comparison with those following injection of the strains from the various diseases, and correspond roughly with the total average incidence of lesions in the various organs as given in the lowest line of the table.

While the incidence of lesions in the organs following injection of the strains isolated from such organs is high, as shown by these figures, the appearances at the necropsy are even more significant. In many instances in which the animals survive the injection for some time, no other focal lesions could be found except those in the organ in question; and when the animal died early, these lesions were the marked feature and the associated ones were relatively insignificant. Frequently the injection of a very small dose was sufficient to prove the elective localization. This elective property was shown not only by the cultures from tissues and foci but also by the bacteria contained in the foci, directly injected in other animals.

In many cases of both acute and chronic diseases the apparent atrium of infection was found to harbor streptococci having elective affinity; in the former usually only at the time of the attack, in the latter in some instances for months. The elective affinity, however, was less marked in the strains isolated from the supposed focus than in the strains isolated from the lesions in the various organs. The rather wide range of lesions, as indicated in the table, following the injection of the strains from herpes zoster and parotitis is due to the fact that often primary mixed cultures from tonsils and pyorrheal pockets were injected.

Attempts to find a method which would preserve the original tropic property, while only partially successful, have shown that it may be preserved for some weeks in the deeper colonies of the original shake cultures and for as long as seven months by keeping the suspensions containing sterile tissue in the ice chest, thus maintaining the bacteria in a condition of latent life.

The localization of the strains from appendicitis, ulcer of the stomach and cholecystitis as isolated, after cultivation and after animal passage, is of particular interest and will be discussed in a separate paper. It should be stated here, however, that these strains resemble one another very closely indeed in cultural and other respects. Those from appendicitis are the least virulent, those from ulcer occupy a middle position and those from cholecystitis are the most virulent. The virulence seems to be one of the factors that determines their place of survival after intravenous injection. Now if the localization is dependent to a certain extent on virulence, then the occurrence of ulcer and cholecystitis should become greater as the strains from the appendix are passed through animals, and appendicitis should occur oftener after the strains from ulcer and cholecystitis lose virulence from cultivation on artificial mediums. This is found actually to be the case (see figures in table). In this connection other facts should be mentioned. None of the strains from appendicitis produced pancreatitis. The strains from ulcer and cholecystitis as isolated (mostly those from acute cases) produced pancreatitis in 3 per cent. and 5 per cent., respectively, of the animals injected. After animal passage, pancreatitis occurred in 15 and 19 per cent., respectively, while after cultivation on artificial mediums pancreatitis in no case was obtained.

Lesions in the intestines, exclusive of the duodenum, were more common with the strains from cholecystitis and rheumatism than with those from appendicitis, and all the strains produced intestinal lesions (chiefly of the mucous membrane and lymphoid structures) quite commonly after they had been passed through animals, whereas, after cultivation for a time, no noteworthy lesions were found in the intestinal tract.

The streptococci studied by me from parotitis resemble the organism described by Herb[2] and, like hers, produced the characteristic picture of mumps in dogs when injected into Steno's duct. Intravenous injection of these organisms produced marked edema and hemorrhage in and surrounding the parotid. The affinity was so great that the streptococci were found in pure culture in the enlarged parotid in three of five full-time puppies removed from the uterus of a dog which was chloroformed during a marked parotitis following injection into Steno's duct. Antigens prepared from a number of these strains were found to bind specifically complement in serum from parotitis (Howell).

Lesions in the skeletal muscles occurred in 75 per cent. of the animals injected. The number of lesions in the muscles and myocardium in the animals injected with strains from myositis was often in proportion to the quantity injected, and occurred mostly in the tendinous portion and in the right ventricle.

Lesions in the kidney were especially common after injections of streptococci from rheumatic fever (39 per cent.) and from endocarditis (20 per cent.). These occurred chiefly in the medullary portion (Rosenow[3]) in the former and in the glomeruli in the latter.

Lesions in the lung, consisting usually of hemorrhages and edema, were rare following injection of the strains when isolated and after they were cultivated on artificial mediums but, just as was found previously (Rosenow[3]) they occurred oftener after the virulence was increased by animal passage.

That the streptococci are the underlying cause of the diseases from the lesions of which they were isolated is indicated further by the fact that they have elective affinity for the corresponding structures in animals. *Moreover, the fact that the same streptococcus may be made to localize in different organs is* in consonance with the knowledge that streptococci may cause diseases with different symptomatology. The *possibility, however,* that they are secondary invaders to some ultramicroscopic, filterable organism has to be considered. Filtrates of the streptococcal cultures from various diseases were injected intravenously. *In* some instances the filtrates produced lesions in the organs from which the strains were isolated; the lesions, however, were not due to living organisms because the broth which was inoculated and incubated *with the tissues* failed to produce any lesions. The results, while *inconclusive, may* be said to indicate that streptococci produce substances which cause injury specifically in the tissues from which the *strains* are isolated.

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[2] Herb, Isabella C.: Experimental Parotitis, Arch. Int. Med., September, 1909, p. 201.

[3] Rosenow, E. C.: Experimental Infectious Endocarditis, Jour. Infect. Dis., 1912, xi, 210; Immunological Observations in Staphylococcus and
d., 1909, vi, 245; Transmutations Within t
Group, ibid., 1914, xiv, 1.

GENERAL DISCUSSION

The results obtained are in harmony with the facts that (1) "*septic sore throat*" is due to streptococci having peculiar properties;[4] (2) certain epidemics of throat infection, due to streptococci, are more frequently complicated by sinusitis than others; (3) distinct differences in the character of the lesion in the lung and mortality rate in pneumonia, as shown by Cole,[5] are due to pneumococci so nearly alike as to require sensitive biologic tests to differentiate them; (4) *hemolytic streptococci* frequently have a marked affinity for joints, and (5) Friedländer bacilli in arthritis show elective affinity for joints in animals when other strains do not (Dick[6]). The "organotropic" condition of streptococci is analogous to the affinity of the tetanus toxin for the motor ganglion cells, of the diphtheria bacillus for the faucial tonsils, of the meningococcus for the meninges, of the pneumococcus for the lung, of the typhoid bacillus for lymphatic tissues, of the virus of rabies for the central nervous system, of the organism of anterior poliomyelitis for the anterior horns of the spinal cord, of the malarial parasite for the red blood corpuscle, and of the *Trichina spiralis* for muscles. The results, moreover, are in accord with the well-known fact that chemicals when injected intravenously also localize unequally in various organs.[7] The changes in the distribution of lesions as the streptococci are altered by cultivation on artificial mediums or by animal passage are similar to the changes in localization of various chemicals or dyes depending on chemical constitution, as observed by Ehrlich.[8] In my experiments advantage was taken of the opportunity afforded to study the nature of selective action from the standpoint of living bacteria.

Flexner[9] has shown that the functioning organ may be especially favorable to the growth of *certain* bacteria although the organ extracts may inhibit their growth; hence the growth of bacteria in various organs may be related to function and blood supply. Streptococci of low virulence but highly sensitive to oxygen are found to produce lesions in tissues whose blood supply and therefore *oxygen* and food requirements are low (heart valves, tendinous portion of muscles and the structures about joints). Streptococci of greater virulence are found to produce lesions in tissues whose blood supply and therefore oxygen and food requirements are high (kidney, lung, etc.); hence localization and production of injury seem to be closely related to the amount of available oxygen in a given tissue. The fact that lesions occurred far more frequently in the right ventricle (containing venous blood) than in the left ventricle (containing oxygenated blood) is in accord with this hypothesis. Might not the predisposing *action* of *trauma* (locus minoris resistentiae), of exposure to cold and of a drunken bout, to *infection* be best explained on the basis of lack of oxygen?

The changes observed, as hemorrhage, cloudy swelling and necrosis, from a purely chemical[10] as well as from a colloid-chemical[11] point of view, are identical with the changes of tissue *asphyxia*. I have found that pneumococci when grown and autolyzed under anaerobic conditions produce a *much* larger quantity of toxic material than when grown or autolyzed under aerobic *conditions*. *Moreover*, pneumococcus extracts proved to be toxic to warm-blooded animals (guinea-pigs), have the same inhibitory effect on the development of fertilized eggs of arbacia as does lack of oxygen. Since bacteria and their products are powerful reducing agents,[12] one of the chief effects of the bacteria and their products very likely is interference with the normal cell respiration, and possibly the greater the virulence the more powerful this interference.

Although the circulation is an important factor in determining localization, the tissues themselves play an even more important rôle. The question whether the lesions in the organ for which a particular strain appears to have elective affinity are due to the lodgment of a larger number of bacteria here than in the other organs, or whether the bacteria lodged in equal numbers in the various organs but survive only in the one showing lesions, is now under study. The evidence already obtained, however, *points strongly* to the former mechanism. It appears that the cells of the tissues for which a given strain shows elective affinity take the bacteria out of the circulation as if by a magnet—adsorption.

This remarkable *tropic* condition tends to disappear quite promptly both on cultivating the streptococci on *artificial mediums and on passing them successively* through animals, and this may occur without demonstrable changes in *morphology*, grouping or character of chain formation. I have previously shown[13] that the ability of *Streptococcus viridans* and staphylococci to produce lesions in the endocardium is due partly to physical clumping. Evans[14] has shown that the action of vital stains of the benzidin group is related to the size of colloidal particles. A careful study of smears of the suspensions injected in these experiments revealed no constant relation between localization and clumping or size of the bacteria.

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[4] Davis, D. J., and Rosenow, E. C.: An Epidemic of Sore Throat Due to a Peculiar Streptococcus, The Journal A. M. A., March 16, 1912, p. 773. North, Charles E.; White, Benjamin, and Avery, Oswald T.: A Septic Sore Throat Epidemic in Cortland and Homer, N. Y., Jour. Infect. Dis., 1914, xiv, 124. Rosenow, Edward C., and Moon, V. H.: On an Epidemic of Sore Throat and the Virulence of Streptococci Isolated from the Milk, Jour. Infect. Dis., 1915, xvii, 69.

[5] Cole, Rufus M.: Pneumococcus Infection and Lobar Pneumonia, New York Med. Jour., 1914, xcix, 23.

[6] Dick, George F.: Multiple Arthritis Due to a Friedländer Bacillus, Jour. Infect. Dis., Chicago, 1914, xiv, 176.

[7] Brown, W. H., and Pearce, Louise: On the Pathological Action of Arsenicals upon the Adrenals, Proc. Nat. Acad. Sc., 1915, i, 462. Corper, H. J.: Action of Sodium Sulphocyanate in Tuberculosis, Jour. Infect. Dis., 1915, xvi, 38.

[8] Ehrlich: Studies in Immunity, Transl. by Charles Bolduan, New York, John Wiley & Sons, 1910.

[9] Flexner, Simon: The Bacillus (Leptothrix?) Pyogenes Filiformis (Nov. Spec.) and Its Pathogenic Action, Jour. Exper. Med., 1896, i, 211.

[10] Hoppe-Seyler, F.: Bemerkungen zur vorstehenden, IV Mittheilung von Herrn T. Araki, über die Wirkungen de [illegible]mangels, Ztschr. f. physiol. Chem., 1894, xix, 476. Araki, T [illegible]on Milchsäure und Glycose im Organismus bei [illegible] f. physiol. Chem., 1891, xv, 335 and 546. Fletcher, W. M., and [illegible]ns, Gowland: Lactic Acid in Amphibian Muscle, Jour. Physiol., 1906-1907, xxxv, 247. Woodyatt, R. T.: The Action of Glycol Aldehyd and Glycerin Aldehyd in Diabetes Mellitus and the Nature of Antiketogenesis, The Journal A. M. A., Dec. 17, 1910, p. 2109. Graham, Evarts A.: Late Poisoning with Chloroform and Other Alkyl Halides in Relationship to the Halogen Acids Formed by Their Chemical Dissociation, Jour. Exper. Med., 1915, xxii, 48.

[11] Fischer, Martin H.: Edema and Nephritis, New York, John Wiley & Sons, 1915.

[12] Smith, T.: Reduktionserscheinungen bei Bakterien und Beziehungen zur Bakterienzelle, nebst Bemerkungen über Reduktionserscheinungen in steriler Bouillon, Centralbl. f. Bakteriol. u. Parasitenk., Part 1, 1896, xix, 181.

Individual variations in resistance to infection were found in the injected animals. The effects of these conditions in the host as determining factors in localization are important; they are probably expressions of differences in metabolism, oxidation rates, etc., which influence the soil for bacteria. The tendency of virulent bacteria, temporarily or permanently, to render this soil less favorable for their growth is well established. There is some evidence, on the other hand, which goes to show that certain bacteria of very low virulence (commonly found in chronic foci of infection) tend actually to make this soil more favorable. But, in the light of my results, it must be considered that differences in the host may afford the peculiar type of reaction, or that the individual harbors a particular form of focus of infection which is favorable for bacteria to acquire elective properties. The following facts support the latter view: (1) the common occurrence of certain noncontagious diseases, such as herpes zoster, ulcer of the stomach, etc., during definite age periods; (2) the fact that foci of infection afford opportunity for bacteria to grow under varying grades of oxygen pressure and in mixed culture, both of which have been shown to cause changes in virulence and other properties of bacteria,[15] including the streptococcus group;[16] (3) the occurrence of systemic infections such as rheumatic fever, appendicitis, ulcer of the stomach, etc., usually after the acute symptoms in follicular tonsillitis (hemolytic streptococci), have subsided, and (4) the finding in the focus and involved tissues at the time of the systemic infection, streptococci having elective affinity for these structures in animals.

Since different bacteria may acquire simultaneously affinity for the same tissue, diseases which resemble each other more or less closely, such as the different forms of arthritis, may be due to bacteria of different species each having elective affinity for the particular structures involved.

The figures in the lowest line of the table represent the results of numerous experiments (833) with streptococci (220) from a wide range of sources, and may therefore be regarded as an index of the liability of the various organs to infection. Thus, joint lesions occurred more often (27 per cent.) than lesions in other organs, corresponding to the frequent occurrence of spontaneous arthritis in man and animals. The occurrence of lesions in the stomach (20 per cent.), valves of the heart (14 per cent.), myocardium (12 per cent.) and skeletal muscles (12 per cent.) correspond in a general way to the occurrence of infection in these organs in man. The very infrequent involvement of the skin, tongue and the parotid in the animals is in keeping with the rarity of embolic infections in these structures. The character of the lesions and their occurrence simultaneously in the joints, heart, muscles and kidney, and the development of chorea (7 per cent. mostly in young rabbits) following injection of the streptococci from rheumatic fever, parallels quite closely the phenomena of rheumatic infection as observed in man. The strains from erythema nodosum resemble those from rheumatic fever, producing a relatively high incidence of arthritis, pericarditis and myositis, a fact which supports the view held by clinical observers,[17] that the causative agents of rheumatic fever and erythema nodosum must be similar.

The tendency to localize electively within a limited range, "monotropism," is most highly developed in the relatively nonvirulent strains isolated from chronic lesions. In the more virulent strains from acute lesions and after animal passage, this tendency is less highly developed, the lesions occurring over a wider range, "polytropism." The fact that the elective property is more highly developed in streptococci isolated from the organ involved, than in those isolated from the probable focus of infection, is in accord with the results obtained by Forssner,[18] who showed that when streptococci are grown in kidney and kidney extracts they acquire a special predilection for the kidney when injected intravenously. Since the bacteria which have grown in a given tissue acquire greater affinity for this tissue, the likelihood of these bacteria to involve other structures is relatively slight; hence the secondary focus, a cholecystitis, for example, would appear to be less important as a distributer of bacteria than the primary focus; if, however, the secondary focus happens to be in a joint, of which there are many, it may play an important rôle in causing extension to uninvolved joints and in preventing recovery.

The bearing that these results have on the specific treatment of these diseases is evident. The injection of a streptococcus vaccine or antistreptococcus serum without regard to the tropic condition of the infecting strain or the one used in their preparation is, in the light of these results, far from an exact method of treatment. However, the occasional, seemingly good result observed by some may be due to the use of a serum or vaccine made from strains in the same tropic condition as the one infecting the individual so treated.

The results detailed in this and in previous papers seem to bring the necessary experimental proof that chronic foci of infection play a most important rôle in causing systemic disease, a fact which has been observed and frequently commented on by different observers, but has been recognized in its full clinical significance especially by Billings.[19] A focus, such as a pocket in the tonsil which cannot heal for mechanical reasons and which is constantly filled with pus and necrotic material, teeming with bacteria, must be regarded in the light of these findings as a culture tube with a permeable wall affording abundant opportunity for the entrance of bacteria and their products.

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[15] Smith, T.: Modification, Temporary and Permanent, of the Physiological Characters of Bacteria in Mixed Cultures, Tr. Assn. Am. Physicians, Philadelphia, 1894, ix, 85.

[16] Rosenow, E. C.: Transmutations Within the Streptococcus Pneumococcus Group, Jour. Infect. Dis., 1914, xiv, 1.

[17] Osler, William: On the Visceral Manifestations of the Erythema Group of Skin Diseases, Am. Jour. Med. Sc., 1904, cxxvii, 1.

[18] Forssner, G.: Renale Lokalisation nach intravenöse Infektionen mit einer dem Nierengewebe experimentell angepassten Streptokokkenkultur, Nord. med. Ark., 1902, 3. f., ii afd. 2, No. 18, p. 1; abstr., Inn. Med., 1902, lv, 45.

[19] Billings, Frank: Chronic Focal Infections and Their Etiologic Relations to Arthritis and Nephritis, Arch. Int. Med., April, 1912, p. 484; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, THE JOURNAL A. M. A., Sept. 13, 1913, p. 819; Focal Infection: Its Broader Application in the Etiology of General Disease, *ibid.*, Sept. 12, 1914, p. 899.

INFLUENCE OF PEPTONE ON TOLERANCE OF THE BODY FOR HOMOGENOUS OVARIAN TRANSPLANTS*

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Much work has been done recently on the subject of the survival of foreign grafts, and interesting results have been obtained concerning the nature of the reaction by which the host destroys the engrafted tissue.

Tuffier[1] reports twenty-four attempts at homogenous grafts of ovarian tissue in man with failure in every case, the same technic being used by which uniformly successful results were obtained in autogenous grafts. He states that as a foreign body the graft is destroyed by macrocytes, and if the macrocytes could be prevented from attacking the graft, it might be possible to obtain success.

Castle and Phillips[2] conclude from experimental work on guinea-pigs and analysis of clinical results that homogenous transplantation of ovaries is not practical in domestic animals and man, unless the tolerance of the body to foreign tissue can be raised. Out of 141 guinea-pigs ingrafted with foreign ovaries, only three gave a functional result.

Davidson[3] reports success with autogenous transplants, but no permanent growth of homogenous grafts, and concludes, "It is a much more difficult thing to obtain permanent growth and function of homotransplants." Marshall and Jolly reached the same conclusions in working on animals.

Murphy has shown that the destruction of heterogenous tissue is brought about by the action of lymphoid tissue of the host,[4] and has had marked success in inhibiting the reaction against these foreign grafts[5] by the use of Roentgen rays and the injection of benzol (benzene, C_6H_6). (Repeated injections of benzol were quite harmful to the host.)

Leo Loeb[6] offers a very illuminating article on the behavior of tissues in a changed chemical environment. His conclusions are as follows: (*a*) In autogenous transplants, some of the tissue may live and grow, but in homogenous transplants only very rarely does this occur; and when it does, the metabolism of the graft becomes much altered in its new environment. (*b*) Different tissues may show different resistance to autotransplantation and homotransplantation, and different experiments may bring out variations of individual reaction between the tissue and the new host. (*c*) For the first week, there is little difference in the behavior of autotransplants and homotransplants; then a gradual destruction of the latter sets in, or the metabolic disturbance in the graft due to the shock of transfer may be great enough to prevent its ever recovering. (*d*) Destruction of the graft is brought about by a secondary reaction on the part of the host, and is accomplished by increased activity on the part of the connective tissue of the host. The action of the two factors is interdependent, but in a given case, one or the other predominates. (*e*) Function of corpus luteum is reduced after autotransplantation; in case of the latter, it is reduced by injurious action of the body fluids. Loeb further states that the toxic action of the body fluids of the host is not a factor in destruction of homografts. Ingebrigtsen,[7] in working with tissues in vitro, observed that normal autogenous serums offer better mediums for growth of tissue than similar serums which have been heated to a degree which causes destruction of complement (56 C. for 30 minutes), and that the reverse is true of foreign serums.

Carrel and Ingebrigtsen[8] found that the fluid of cultures in vitro containing a heterogenous serum has in five days acquired the power to hemolyze the red blood cells of the animal furnishing the heterogenous serum, while the serum of controls remains nonhemolytic. They attribute the development of hemolysis to the presence of antigen. This reaction of the graft is in turn met by the reaction on the part of the host, which we see manifested by a round-cell infiltration of the tissues of the graft, and which leads to the ultimate destruction of the graft.

Vaughan[9] also states that "any foreign protein (in this case ingrafted tissue) which can grow and multiply in the body of a given animal may prove pathogenic to the animal." He believes that some of the body cells in preparing for their combat with foreign protein develop a new function: that of elaborating a new and specific ferment which will digest and destroy the foreign protein.

In work done by Carrel[10] it was found that the limbs transplanted on an infected host were more apt to live than were those transplanted on an uninfected host. This would indicate that the action of the infecting bacteria had some inhibitory influence on the reaction of the host against the graft. Furthermore, since Besredka, Ströbel and Jupille[11] have shown that the action of complement on bacteria gives a substance which is identical in many of its physiologic actions to the substance obtained by the action of complement and peptone, it does not seem unreasonable to suppose that injections of Witte's peptone should have a similar effect on the reaction of the body against ingrafted tissues.

It was therefore thought that it might be profitable to undertake the following animal experiments in order to determine whether or not the repeated periodic injections of a solution of Witte's peptone would increase the tolerance of the body to grafts of foreign tissue.

TECHNIC

Operation.—The rabbits were operated on in pairs in order to make possible the immediate transfer of the grafts. The strictest aseptic technic was followed. A lower median incision was made through which both ovaries were completely removed. Great care was taken to leave no native ovarian tissue behind. The pedicle of the gland was clamped with

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[1] Tuffier, Theodore: Transplantation of Ovaries, Surg., Gynec. and Obst., 1915, xx, No. 1, p. 30.

[2] Castle, W. E., and Phillips, J. C., referred to in Ovarian Transplantation, editorial, The Journal A. M. A., Jan. 10, 1914, p. 131.

[3] Davidson, H. H.: Transplantation of Ovary in Human Being, Med. Rev., 1913, lxii, No. 8, p. 297.

[4] Murphy, James B.: A Source of Defense to Heteroplastic Tissue Grafting, The Journal A. M. A., Jan. 17, 1914, p. 199.

[5] Murphy, James B.: Heteroplastic Tissue Grafting Effected Through Roentgen-Ray Lymphoid Destruction, The Journal A. M. A., May 9, 1914, p. 1459.

[6] Loeb, Leo: The Influence of Changes in the Chemical Environment on the Life and Growth of Tissues, The Journal A. M. A., Feb. 27, 1915, p. 726.

[7] Ingebrigtsen, Ragnvald: The Influence of Heat on Different Sera as Culture Media for Growing Tissue, Jour. Exper. Med., 1912, xv, 397.

[8] Carrel, Alexis, and Ingebrigtsen, Ragnvald: Production of Antibodies by Tissues Living Outside of the Organism, The Journal A. M. A., Feb. 17, 1912, p. 477.

[9] Vaughan: Protein Split Products in Relation to Immunity and Disease, Philadelphia, Lea & Febiger, 1913, pp. 22, 23.

[10] Carrel, Alexis, quoted by Tuffier (Footnote 1).

[11] Besredka, A.; Ströbel, H., and Jupille, F.: Anaphylatoxin, Peptotoxin, und Peptone in ihren Beziehungen zur Anaphylaxie, Ztschr. f. Immunitätsforsch., 1913, xvi, No. 3, p. 249.

Kelly forceps and ligated below the forceps, and then cut between the ligature and forceps. Multiple simple grafts were used. One ovary was discarded and the other sectioned for grafts into the other rabbit. The ovary which was used for grafts was held by the pedicle and was not touched by instruments or gloves. The method of cutting the grafts differed and will be detailed later in each case, but the cardinal points observed were:

1. To minimize the traumatic shock and the danger of infection to the ingrafted tissue, by having it come in contact with nothing except the sectioning instrument, and the use of a very sharp sectioning instrument.

2. To minimize the time which the graft was in contact with the air between removal from the donor and implantation into the host.

3. To obtain good contact between the cut surface of the graft and a portion of peritoneum where the possibility of vascularization was good.

The grafts were left free in order to avoid trauma incident to suturing them in place. The abdomen was closed in layers with linen.

Peptone Injections.—Peptone injections were made at the time of operation and thereafter every four days until the animal was sacrificed for necropsy. The injections were made intraperitoneally under aseptic precautions, and the dose used was approximately 1 c.c. of a boiled 10 per cent. solution of Witte's peptone to each 100 gm. of the rabbits' weight.

The rabbits used as controls underwent the same operative technic as experiments, but received no peptone injections.

Following the peptone injections, the animals showed a reaction which was manifested by labored breathing, restlessness, and general bodily weakness similar to that described[11] as following the injection of an attenuated dose of peptotoxin which had been formed by the reaction of complement and peptone outside of the body. In every case after the animals had received from three to four injections, they showed a condition of reduced metabolism evidenced by a loss of body weight and marked thinning of the coat. This was not noticed in the controls, which were otherwise subject to similar conditions.

Ten rabbits were operated on; five were used for peptone injection and five for controls. The experimental rabbits and their controls in each case were operated on in pairs and subjected to similar conditions. The controls of Experiments 1 and 4 were lost through postoperative death.

SUMMARY OF EXPERIMENTS

Experiment 1.—Rabbit 1 (nineteen days' duration). Large en masse graft, consisting of one-half ovary, on mesentery of large bowel. At necropsy the graft had a large area of central necrosis surrounded by ovarian tissue which showed signs of beginning destruction. All of the ovarian tissue remaining was invaded by a new blood supply. The invasion by round cells had already taken place. This experiment was not controlled.

Experiment 2.—Rabbit 2 (controlled by Rabbit 3; six weeks' duration). Multiple small graft on mesentery. Grossly, the grafts in the animal injected with peptone had acquired a more profuse blood supply than those in the control in which no peptone had been injected, and were larger and felt more firm. On microscopic section it was found that destruction of ovarian tissue was complete in them, while there were small areas of ovarian tissue remaining in the grafts of the control. The invasion by round cells and connective tissue was more marked in the rabbit receiving peptone injections.

Experiment 3.—Rabbit 4 (controlled by Rabbit 5; eight weeks' duration). Multiple millet seed grafts in peritoneal cavity. These grafts were firm and healthy in appearance, and had a much more profuse blood supply than their controls; but microscopic sections showed all of their ovarian tissue to be necrotic, while there was still some ovarian tissue remaining in the controls. The cellular infiltration was more marked in the grafts of the injected animal.

Experiment 4.—Rabbit 6. Single en masse graft on broad ligament. Twelve weeks' duration. Twenty peptone injections. The graft had undergone complete destruction and had been almost entirely absorbed.

Experiment 5.—Rabbits 7 and 8; of only a few days' duration. Interrupted by the incidence of peritonitis, and the grafts had evidently lost their viability owing to the peritonitis, rather than to the usual reaction of the body against foreign tissue.

COMMENT

As has been seen, there are many references in the literature to the nature of the mechanism of the reaction by which homografts are destroyed. Tuffier explains the process by the action of macrocytes. Loeb believes that such grafts are destroyed by mononuclear invasion and proliferation of connective tissue. Murphy has shown that the presence of lymphoid tissue is essential before the host can destroy a foreign graft. In the foregoing experiments, the grafts were not attacked by macrocytes. Mononuclear infiltration and connective tissue proliferation were uniformly present. I can see no reason, however, to suppose that these evidences of reaction on the part of the host are the essential factors in the destruction of the graft. I am rather inclined to take exception to the further statement of Loeb that the toxic action of the body fluid of the host is not a factor in the destruction of these grafts. Several of the observations quoted above would indicate that the serum plays the primary rôle in the destruction of homografts.

1. Ingebrigtsen found that if complement was exhausted from foreign serum, it offered a better culture medium for tissues than normal serum, and that the reverse was true for autogenous serum.

2. There is no evidence of reaction against foreign tissues until just that period of time has elapsed after their introduction into the body which is necessary for the development of specific immune bodies. This led to the hypothesis that the tissue cells might be destroyed by a lytic action of the serum involving Erlich's side chain of the third order. The round-cell infiltration and connective tissue invasion, which was observed in all instances, may be explained as the usual reaction against any tissue in the body which becomes necrotic.

It was on the basis of this theory and the observation of Carrel that bacterial infection inhibited the reaction of the host against homografts that the foregoing experiments were undertaken, because Besredka, Ströbel and Jupille have shown that peptone exhausts complement from the serum and has a similar action to bacterial intoxication.

CONCLUSIONS

As the result of the experiments, we may reach the following conclusions:

1. Peptone injections, as they were made, tend to intensify rather than inhibit the reaction of the host against homogenous grafts of ovarian tissue.

2. Such injections of peptone produce a condition of reduced metabolism in the animal, but not to such an extent as to prove dangerous to life.

3. An abundant blood supply to the graft does not indicate that it is viable in its new environment, but may rather be evidence of an intense reaction against it on the part of the host.

4. The destruction of the graft is practically complete by the sixth week, both in animals injected with peptone and in those not injected.

5. The host primarily reacts to the presence of the graft by revascularization of its tissues, and the further reaction which evidently involves the destruction of the graft is evidenced by round-cell infiltration and proliferation of the connective tissue of the host.

6. The presence of peritonitis within a few days destroys the viability of intraperitoneal grafts.

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DETACHMENT OF THE RETINA

WITH A PRELIMINARY REPORT ON A NEW OPERATIVE PROCEDURE *

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Detachment of the retina is a condition of such seriousness, and its treatment is so unsatisfactory, that we feel justified in placing on record even a small number of cases.

There are three principal theories as to the causation of retinal detachment:

1. Von Graefe in 1854 assumed that a hemorrhage occurred behind the retina, basing his conclusion on the sudden appearance of the condition. Arlt considered that the fluid behind the retina was due to a secretion or exudation from the choroid pressing against the vitreous humor and thus bringing about its gradual absorption. The present theory, which has a large following, assumes a primary retroretinal exudation with compensatory diminution of volume in the vitreous.

2. Leber's theory, which embodies Müller's theory of fibrinous degeneration of the vitreous, and Iwanof's theory of detachment of the vitreous and shrinking, and Arlt's theory of rupture, or tear. Leber argued that given the shrunken fibrillary vitreous attached more extensively and firmly than normal to the retina, with its pool of fluid representing the amount of shrinking, the train is laid for an acute spontaneous detachment. A sudden rent occurs and through this the preretinal fluid rapidly becomes retroretinal and the detachment is accomplished.

3. Raehlmann's theory, which assumes a primordial alteration in the constitution of the vitreous, whereby, through the influence of osmosis, the watery constituents pass through the retina seeking to equalize with the juices of the choroid, which are rich in albumin.

Each of these theories has had its followers, but so far histologic examination has done little to establish any one of them. Our present point of view must rest on deduction and inference from well-known clinical phenomena. Speaking of retroretinal exudation, Schöbl[1] says:

> It is inconceivable that so large an exudation can be thus formed in a few moments, and even if this were possible and this exudation can overcome the normal pressure of the vitreous humor and press the retina inward, the intra-ocular tension must needs be enormously increased, and that is the condition that is hardly ever found in retinal detachment.

This point seems not to be well taken. Exudation from the choroid probably can occur rapidly. Intra-ocular tension depends not so much on excessive secretion as on the blocking of the outflow, so that even if we assume a choroidal exudation, increase in tension would not necessarily follow. Iwanof found in highly myopic eyes a detachment of the vitreous humor at the posterior pole, and his explanation of this fact was that the vitreous could not increase in volume as rapidly as the posterior part of the sclerotic was distended, and in consequence serum would have to fill the gap. If this were the active factor in myopic detachment, the lesion would invariably take place at the posterior pole, which is not the case. Also evidence goes to show that it is possible for the vitreous to increase rapidly in volume through imbibition of serum. This occurs in the rapid increase of tension during trephine operations in old glaucomatous eyes. Even if the anterior chamber is open, the pressure rises, and a prolapsed iris cannot be replaced. Also, after a loss of vitreous during cataract extraction, it is well known that almost all cases which heal up do not show detachment of the retina for some weeks, or even months. Such cases are invariably found with the eye plumped up to normal dimensions as soon as the wound is closed, generally on the following day. Iwanof thinks that the exudation behind the vitreous humor finally lacks room and must filter into the humor itself or pass backward through the retina and thus lift this membrane from the choroid. However, as Schöbl remarks:

> This explanation is incorrect and against all physical laws, since the fluid between the vitreous humor and the retina must exert an equal pressure in all directions and, therefore, could press the retina more firmly against the choroid, but could never detach it from this membrane.

A great deal of stress has been laid on rents in the retina, and it must be admitted that given a retinal rent it is conceivable that serous fluid might in such a case find its way through the rent between the retina and choroid. Many cases of detachment, however, show no demonstrable rents in the retina, and when one considers how much traction the retina can bear in old inflammatory conditions without showing any rent, it seems much too fantastic to assume the existence of a rent from traction when the most careful examination with the ophthalmoscope will not show any evidence of traction in the vitreous. In fact, most idiopathetic detachments have a sacculated, or rounded, appearance, which is suggestive of pressure from beneath, but has not the faintest resemblance to a condition which might be produced by traction bands in the vitreous. The commonest form of traction is that which occurs in the ciliary region from old inflammatory exudates, and while traction from exudates may occur, it is certainly very doubtful if it is in any sense a factor in the ordinary idiopathic detachment. The status of the so-called retinal rents has not as yet been

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[1] Schöbl: Norris and Oliver's System, iii, 534.

satisfactorily established. A few have been observed in the periphery of the retina, but the causal relationship between rent and detachment is by no means settled. In one of our cases a well-defined "V"-shaped rent could be seen, across which ran a retinal vessel. As the direction of the retinal rent, which was roughly in the shape of a very obtuse angle, extended at right angles to the direction of greatest tension in the detachment, it seems more reasonable to assume that the rent was due to the pressure of the fluid from beneath and that it was a secondary feature.

The clinical course of many detachments is about as follows: The detachment occurs rather rapidly, and on our first ophthalmoscopic examination we find a perfectly clear vitreous with a sacculated spot in the retina and a vision which is reduced entirely out of all proportion to the local condition. One would think that a detachment which did not involve the macula and did not hang in front of it in the vitreous, would not reduce the vision. The vision is frequently very much reduced, however, and may become progressively worse in the early stages of the condition, so that the lymphatic derangement is far more serious than the local appearance would lead us to believe. In the detachment which occurs alongside of a sarcoma of the choroid, and which is manifestly due to the transudation of serum, the appearance and clinical characteristics are exactly the same as in the ordinary detachment, and these cases must be looked on as a still further proof of the distention theory. After detachment has existed for a certain length of time, floating bodies appear in the vitreous, and iritis and other inflammatory changes supervene. Traction bands may then form from degeneration of the vitreous. The diffusion theory "presumes differences in tension in two fluids, one of which is in front and the other behind an animal membrane. These conditions exist when the retina is detached. Behind the retina there is a relatively albuminous fluid, while in front of it in the vitreous chamber there is a fluid that contains but little albumin, the diffusion taking place more rapidly the greater the difference in density of the two fluids" (Schöbl).

Parsons[2] says:

> In most cases, according to some investigators in all, the retina is ruptured and fluid passes through the rent from the vitreous. It is certain that in many cases no rupture of the retina can be seen ophthalmoscopically, and it is probable that it is not an indispensable factor. If so, the fluid must be derived from the choroid or from the vitreous by a process of osmosis. Such experiments as have been made on the latter possibility have not been conclusive.

Vail[3] has recently written a comprehensive paper on the subject of treatment of retinal detachment which bears quotation in this connection. This paper is based on replies received from 281 oculists, 250 representing, according to the author's estimate, an average of twenty years of practice, and an experience averaging five cases a year, or about 25,000 cases in all, with the employment of every known line of treatment, "and not a single case of permanent cure in the lot." On the other hand, 31 oculists have secured cures; 25 each had a single cure; 4 secured 2 cures, and 2, 4 cures, making in all 41 patients reported cured. Two of these patients had detachment due to albuminuria in pregnancy, and they were cured after abortion. They should not be counted, as treatment is not applicable except in these unusual circumstances. This leaves 39 cures. In about one-half of this number the cure is not convincing from the records submitted, leaving, say, 20 cases, or less than 1 cure in every 1,000 cases. The author considers that these figures show conclusively that there is no proper treatment for this condition.

De Schweinitz, in a personal letter, says:

> The treatment that I have found most satisfactory has been posterior sclerotomy, with drainage of the subretinal space; rest in bed; and the injections subconjunctivally of saline solutions. In recent years I have added to this dionin, sometimes sweats, usually with pilocarpin.

Vail's theory is that there is a paralysis of the secretory function of the ciliary processes. This means that the secretion of aqueous is suddenly arrested. There being nothing wrong with drainage channels within the eye, the watery elements find ready egress, thus giving a minus tension. Leber found 90 per cent. had minus tension. The withdrawal of normal tension causes passive hyperemia of the blood vessels of the tunica vasculosa. This allows diapedesis and transudation. The vitreous contracts because it loses its percolating supply of aqueous, which soon drains off through the efferent channels which are wide open, and the fibers of the vitreous naturally contract like a sponge would after losing its water. The subretinal transudation is highly albuminous. The watery elements ooze away and are replaced by fresh serum, a poor substitute for aqueous. The tissue colloids and circulating colloids imbibe all the moisture they can. The reaction of the transuded juices becomes altered to a less than normal alkaline or an actually acid state. Vail further says that the causes of such a paralysis of the secretion of the ciliary body may be acute local and systemic, or chronic local. Acute local cases are from blows; certain drugs, like belladonna, when the patient has idiosyncrasy or a preceding equatorial choroiditis, or myopia. Acute systemic cases might arise from certain toxemias, like those of albuminuria, diabetes, etc., which have a paralyzing effect on the secretory function of the ciliary body. "Chronic local" from slowly progressive atrophy of the secreting epithelium of the ciliary processes. Vail's conclusions are that surgical treatment is not founded on scientific principles; that detachment of the retina is not a disease, but a symptom; that the disease is paralysis of functions of the ciliary processes, causing an arrest of aqueous secretion within the eye. The treatment should be the use of those measures, and only those, which have for their objects the reestablishment of the lost function of the ciliary processes. Vail rather advocates subconjunctival injections of sodium citrate, after M. H. Fischer's ideas.[4] This treatment is supposed to reestablish the aqueous flow by rendering alkaline the intra-ocular juices.

While this theory has a very attractive sound, it must be remembered that it is for the most part nothing more than a theory, and while it fits certain clinical aspects of the cases, so far as treatment is concerned, little benefit apparently has been secured. Sodium citrate injections, or any form of subconjunctival injections have given not the faintest glimmer of hope in our hands. We are, however, prepared to subscribe to the theory that the transudation of serum beneath the retina is but a symptom of a deeper intra-ocular disorder, but cannot altogether feel that it is a progressive degeneration. There is reason to believe that the actual detachment has something to do with lowering the nutrition of the eye and subjecting it to the well-known degenerative processes which supervene in a large proportion of cases—floating opacities of the vitreous, iritis and cyclitis, and later cataract. All these come on after the detachment has existed for some time, and are, as a rule, the more prone to occur the larger the detachment. The clinical course of the ordinary idiopathic detachment does not suggest a progressive degenerative process. If such were the case, there would be no reason why a detachment should not appear gradually and gradually enlarge. On the other hand, the detachment appears suddenly and, as a rule, remains approximately the same size until further degenerative symptoms set in. It seems, therefore, as if the exudate came from a sudden attack which subsides, leaving the exudate in situ, and that further degenerative processes are due to the presence of the detachment.

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[2] Parsons: Pathology of the Eye, iv, 1166.

[3] Vail: An Inquiry into Results of the Established Treatment of Detachment of the Retina, and a New Theory, Ann. Ophth., 1913, xxii, 1.

[4] Fischer, M. H.: Glaucoma, Tr. Am. Acad. Ophth. and Otolaryngol., 1911.

We wish to record our belief that the clinical evidence is in favor of the choroid as an origin for the subretinal fluid. It may be asked that if the choroidal fluid filters into the subretinal space, why should it not also filter into the suprachoroidal space, and that is exactly what it does. As long ago as 1830, William Mackenzie in his treatise on Diseases of the Eye, said: "It has been ascertained by dissection that a watery fluid is sometimes present between the sclerotica and the choroid." This fact appears somewhat to have been lost sight of by later writers, as is perhaps natural, considering the fact that the condition cannot be discovered with the ophthalmoscope, and the ordinary puncture operations have simply allowed the fluid to escape without giving any light as to the true situation of the fluid. In trephining the sclera, it is in many instances found that a gush of fluid escapes before the choroid is punctured. The histologic examination of enucleated eyes for simple detachment of the retina is naturally rare. It will usually, however, be found that in the process of hardening, the anatomy of the detachment as observed during life is entirely obliterated. This is especially apt to occur in recent detachments before shrinkage and degeneration of the retina have occurred, and it is just in these cases in which such an examination would be of most value. We have not been able to find, in the limited number of cases examined, any definite adhesions, and definite localizations of the detachment by adhesion between the retina and choroid, nor any suggestions as to the origin or amount of the fluid.

Kuemmel[5] gives a very interesting account of the histologic examination of an enucleated eye with retinal detachment. He deduces some interesting theories, which to a certain extent harmonize with Vail's ideas, but the patient presented at the time of the enucleation a sharp atack of secondary glaucoma. Moreover, the fact that the process was an old one to a certain extent introduces elements which must be taken into consideration. He found inflammatory changes of a proliferating character in the iris, ciliary body, and choroid, and considers that these various changes are at the bottom of the choroidal effusion which leads to detachment. He further says:

> On account of these changes in the choroid and the ciliary body, disturbances must arise in the vitreous body, which, although it cannot be shown that they lead to disturbance of the fibrillae in an atrophic sense, still cause abnormal connections of this body with the surface of the retina, as is shown in the specimen. This is especially conspicuous in the anterior portion. On account of these unequal connections at the juncture of these two structures, there must arise differences in the tension, which must remain latent as long as the retina is connected.

He further argues that given a diminution of tension of the vitreous there must be a heightened tension in the choroid, which is made apparent by the increased blood supply. (If this principle were true, detachment of the retina should follow more frequently attacks of choroiditis, especially when accompanied by diminished tension.) Thus, a decrease of tension arises from the direction of the choroid to the vitreous body. He further says:

> We may accordingly assume that the retinal detachment arises by virtue of pressure from behind, due to the retroretinal transudate, as well as by traction on the part of the vitreous body from the opposite side.

Taking all of this into consideration, it seems to us that in the present state of our knowledge, we are not justified in assuming anything more than that retinal detachment occurs as the result of a lymphatic derangement leading to exudation from the choroidal vessels. It has been argued that in the cases of detachment following a blow, the degenerative condition predisposing to the detachment were already existent. This may be perfectly true, but, on the other hand, the manner in which traumatic detachment forms seems directly to support the theory of a choroidal effusion and directly to controvert the theory of vitreous traction. Traumatic detachments show at least that detachment can occur without participation of the vitreous body. It seems somewhat unreasonable to presuppose choroidal disease in traumatic detachments, for, if such were the case, we should have evidences of choroidal disease followed by later detachments in the fellow eye, which clinically do not occur. Cases of traumatic detachment have been observed for years, in which no detachment occurred in the fellow eye. This would not be the case if a degenerative uveal process were at the bottom of the detachment, for it is hardly conceivable that such a process as has been supposed to exist could occur in one eye alone. The clinical course of traumatic detachments also tends to support the idea that the secondary degenerations are due to the presence of the detachment. For secondary degenerations, uveitis, cataract, etc., occur in traumatic detachments just as they do in the idiopathic detachments. In myopia the question is a much more complicated one. It cannot be denied that the structure of the retina makes it less extensible on account of its rich connective tissue supporting the framework. And yet, as Schöbl has pointed out, if detachment was due solely to the lack of extensibility of the retina, it would occur invariably at the posterior pole. It seems probable, therefore, that the elongation of the myopic eye is merely a predisposing factor and that the exudation from the choroid takes place in these cases in somewhat the same manner as in the idiopathic and traumatic ones. It must, of course, be clearly understood that the class of cases in which disease of the choroid, or ciliary body, or both, lead to floating opacities in the vitreous, diminished tension, etc., that the detachment is apt to occur as a degenerative symptom from the general lymphatic disturbance, from the pulling of old organized exudates, etc.

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[5] Kuemmel: Ann. Ophth., 1913, xxii, 437.

These cases, while bearing certain points of similarity, are clearly to be placed in an entirely different category from the ordinary idiopathic detachment. In other words, a clear distinction should be made between the cases in which the inflammatory symptoms antedate the detachment and those in which the detachment antedates the inflammatory symptoms.

It seems to us that we are justified in the two following assumptions: First, the presence of the detachment in itself leads to lymphatic disturbances and further complications of a degenerative nature. Second, the evidence on all sides, so far as it goes, is in favor of some operative procedure which withdraws the subretinal and suprachoroidal fluid. In the past when simple sclerotomy has been done and the fluid evacuated, it has been the rule to find a marked improvement in an attempt, however feeble, at reattachment. To be sure, when patients are allowed to get out of bed, the retina promptly redetaches, but this may be due to other factors. It seems probable to us that the fluid has not, in these cases, been removed completely enough to allow the retina to assume its normal position. The vision usually has improved, however, and the conditions have been promising for a time, and this has not been the case with any other means of treatment in our hands. With pilocarpin sweats, and rest in bed—in other words, a drastic elimination treatment—the fluid has at times undergone partial resorption, but this has never in our experience led to more than temporary relief, and has the serious objection of being greatly depressant, so that it has been abandoned by us, as by most surgeons within our knowledge. Good results have been reported by various surgical measures from time to time, but in all of these, puncture of the sclera occupies an important place, and he would indeed be venturesome who asserted that the scleral puncture was not the main, or perhaps the only cause of the improvement secured. Casey Wood[6] says:

> Scleral puncture seems to have held its own to the present time, and alone, or in conjunction with other forms of treatment, is practiced more frequently in detached retina than most of the surgical procedures about to be mentioned. Cures following its performance are not uncommon and when practiced within proper scleral areas, it is practically devoid of danger.

He also says (page 1356):

> Quite a number of brilliant and permanent cures have followed persistent treatment and a repetition of operations, in spite of these relapses. . . . No surgical intervention should be undertaken unless all parties to it are willing to have the patient submit to repeated operations as long as there is a chance of recovery. Deutschmann, for example, has finally succeeded in several cases of relapse, after operating a dozen times or more.

Acting on the foregoing ideas, we have endeavored to secure permanent drainage by means of a trephine opening in the sclera, through which the subretinal fluid could be completely removed by aspiration with a small syringe. This aspiration could be repeated several times, if necessary.

Trephining for detachment has also been done by Walter R. Parker,[7] and probably by others, with good results; but the incision of the choroid heretofore practiced seems likely to lead to reaction and vitreous hemorrhage, so that aspiration has been substituted.

It is a well known fact that the subretinal fluid in detachment tends to gravitate to the lower part of the globe. There are several points of doubt in connection with this phase of the subject, but it is probable that detachment is not a purely local process and that where several detachments occur, their shape is determined by more or less imperfect adhesions between the retina and choroid, and that the entire area beneath the retina is to a certain extent in communication. Frequently a detachment in the upper part of the field will subside, leaving the retina over the site of the old detachment apparently reattached, and the fluid will gravitate to the most dependent position—the lower part of the eyeball. It seems wiser, therefore, to select for the site of operation the most dependent position possible, which is within the area of the detachment, and this will usually be a point about equidistant from the external and the inferior recti muscles, or a corresponding point between the internal and the inferior recti. The trephine opening should be made as far back as possible, and this is naturally more easily accomplished when the operation can be done between the external and inferior recti muscles than on the opposite side. No speculum is necessary. An assistant inserts a strabismus hook and retracts the lower lid and tissues of the external canthus. A curved incision is made through the conjunctiva with the convexity in the direction of the cornea, and the tissues are taken up down to the sclera. It is wiser at this juncture to put in a single silk suture at the summit of the flap, as otherwise the capsular tissue underneath the flap is apt to be rolled up and the ultimate flap will then be composed of nothing but conjunctiva, leaving more or less thickening and adhesions in the episcleral tissues, which tends to seal up the trephine opening. The entire thickness of tissue is taken up, down as far as the sclera, and dissected well back. The assistant then holds this flap back by means of the suture. The trephine opening is then made with a 2 or 3 mm. trephine. We are of the opinion that a larger opening is better, but experience is necessary to decide this point. On the removal of the trephine button, there is in many instances a gush of serous fluid from the suprachoroidal space. Examination of the eye usually shows considerable subsidence of the detachment after this fluid has escaped. The flap is then sutured into place and the eye bandaged and the patient put to bed. It goes without saying that the pupil should always be well dilated with atropin before the operation, both for purposes of examining and to keep the eye as free as possible from the tendency to inflammation. There is usually very slight reaction after the trephine operation. In a week or ten days later, the patient is put on the operating table and the needle of a small aspirating syringe is inserted into the subretinal space through the conjunctiva and choroid. The subretinal fluid is then forcibly aspirated, after which the patient is put to bed for a day or two, as circumstances require. The aspiration operation is followed by practically no reaction and can be repeated as long as the trephine opening remains free. In this connection, it is very important to have the flap properly made, as, if capsular tags are allowed to roll up under the flap, it is difficult to see where the opening lies and to enter the needle requires a great deal of stabbing around in the dark. If the conjunctival flap heals properly, the trephine opening shows as a small dark spot, which is easily identified. It does not show, however, so plainly as a trephine opening at the corneal margin, on account of the greater thickness of the conjunctival and capsular tissues in the flap. In some of the cases presented, a single aspiration was sufficient, but in others there was reaccumulation of fluid and the aspiration had to be repeated.

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[6] Wood, Casey: Ophthalmic Operations, Chicago, Cleveland Press, 1911, ii, 1,360.

[7] Parker, Walter R.: Tr. Am. Ophth. Soc., 1914, p. 661.

It is evident that this procedure, in order to be successful, must be undertaken before the detachment is old enough to have undergone degenerative changes. A shrunken and contracted retina will, of course, not fall back into position, even if the fluid be withdrawn; nor is there any probability of success if inflammatory changes have set in, especially if the intra-ocular tension has fallen much below the normal. It is, also, hardly conceivable that the operation would be successful in high degrees of myopia, although on this point experience is lacking. The rationale of the operation, however, is in recent traumatic or spontaneous detachments where there seems a likelihood that the fluid accumulation is acting to keep up the condition.

REPORT OF CASES

CASE 1.[8]—B., a bookkeeper, aged 21. Family history negative. Sept. 22, 1914, he noticed blurring in the sight of the left eye. September 26 he visited a hospital but did not receive any treatment. He visited Dr. Curtin, October 1. There was no history of trauma. Urinalysis, Wassermann and von Pirquet all negative. Blood pressure 128. R. V., 20/40. L. V., hand movements in the lower and outer parts of the field. There was low myopia in each eye. A large detachment of the lower and outer part of the retina was found in the left eye. The retina was bluish-white and thrown into folds with loss of the light reflex of the vessels. The disk was still visible, but the detachment extended nearly to the macular region. There were a few floating vitreous opacities. He entered the Manhattan Eye, Ear and Throat Hospital, October 2, and was put to bed, pupil dilated with atropin and pressure bandage applied. Pilocarpin sweats were given every second day. October 12, no improvement being apparent, he was operated on by Dr. Curtin. Under cocain, a button of sclera, 2 mm. in diameter, was removed by the trephine from under a conjunctiva flap over the site of the detachment and as far back as possible between the inferior and external recti muscles. The choroid and retina were not punctured. The conjunctival flap was united by two silk sutures and a moderate pressure bandage applied. He continued in bed until October 22, having had but a moderate amount of reaction. On that date, a medium-sized aspirating syringe was pushed through the conjunctiva and scleral opening and choroid, and 25 minims of serous fluid withdrawn. This subsequently was found to resemble serous fluids in general. The fundus of the eye was immediately examined and the retina was seen to have fallen back into place. The patient was returned to bed and kept there until November 4. The vision on the following day was found to be "fingers at 8 feet." There was hardly any reaction, and the eye did not even redden. The vision gradually increased. He was allowed to get out of bed November 4. November 16 his vision and retraction were as follows: Right, 20/40 : 20/20 with a minus 1.50 cyl. axis 180 degrees; left, 20/70 + : 20/40 with a minus 1.00 cyl. axis 180 degrees.

December 22, vision in the left eye was 20/30. January 27, the left lens was increased to — 1.50 cyl., which gave him vision of 20/20. At the time of writing (March 15, 1915) his vision has remained 20/20 with his correction. Externally the eye is normal in appearance, except that at the lower and outer aspect of the globe can be seen a small bluish circle, the site of the trephine opening. The conjunctiva is slightly chemotic over this area.

Ophthalmoscopically, the retina is entirely attached except in a small area in the lower and outer field, which is probably at the site of the scleral trephining. This can only be seen with the pupil dilated and the patient looking markedly downward. Small white striae can be seen in the retina in the lower macular region and lower parts of the fundus, the former site of the detachment.

There are a few floating opacities in the vitreous that can still be seen. The patient no longer observes flashes of light or disturbances in the eyes or contour of objects and readily reads the test type, in contradistinction to his earlier tests when he would deliberate and study the letters for a short time before pronouncing them.

As his record shows, his vision has gradually increased so that today it is slightly better than normal.

The patient has changed his occupation to that of salesman. He returned to work Nov. 23, 1914, and travels around the city on the various surface, subway and elevated trains, and has taken no special precautions regarding jarring, and his eye, to date, shows no indication of any redetachment.

CASE 2.—J. W., a clerk, aged 23. Family history good. He smokes and drinks moderately. Three years ago he had pneumonia. Nov. 13, 1914, he was accidently struck in the right eye by a companion. Immediately following it pained for about one-half hour. Two weeks later he noticed when going out into strong sunlight a black spot appeared before his vision. He tested the eye and noticed that day by day the vision was failing, so that by December 8, he could see very little. On this date he came to the hospital. Vision in the left eye was 20/20. In the right eye "fingers at 1 foot" in the upper field. Examination showed a large detachment in the upper and outer part of the fundus, with general edema of the entire retina, and with some slight detachment apparent below the macula. Three diameters to the nasal side of the disk, there was a patch of dark pigment, and through the center of this a whitish mass projected forward into the vitreous. Above this at the outer side could be seen grayish-white striae extending upward and inward, and down from this mass, which looked like a rather atypical form of retinitis proliferans, the retina was bluish-white and detached. The patient entered the hospital on December 12 and a scleral trephine was done by Dr. Thomson, between the inferior and external recti. December 22, the subretinal fluid was aspirated. At first there was no change in the vision, but after the aspiration the vision had increased to 20/200, and the field was enlarged. Twenty minims of fluid had been withdrawn. This was found to have the usual characteristics of serous fluids. He was kept in bed for a week, at which time the vision equalled 20/70 in a field extending to 50 degrees laterally on each side, 30 degrees above and 70 below. At present the retina is entirely reattached in the upper field. There is still a detachment below the mass. The vitreous is slightly hazy. The mass is apparently unchanged, except that at the apex can be seen a few small vessels, and several dark striae run to the posterior surface of the lens. Externally the eye appears normal. The pupil reacts to light, and the trephine opening can be seen through a slightly chemotic conjunctiva. Urinalysis, Wassermann and von Pirquet negative.

CASE 3.—J. Z., a baker, aged 42. About the middle of October he noticed the sight of the right eye was becoming dim. He did nothing until December 16, when the vision was so badly reduced that he could not count fingers. December 23 he came to the hospital. There were two large detachments occupying the entire lower half of the right fundus. The disk was partly obscured. The form field could not be made out, and the light field was obscure in the larger portion. The patient gave a history of chronic rheumatism, although his health had been good for the past two years. The tension was reduced in the right eye. Vision of the left eye was 20/20 —. Urinalysis, von Pirquet and Wassermann negative. The patient was put to bed with atropin and a pressure bandage. On January 5, Dr. Curtin did a trephine operation, making a 2 mm. opening between the external and inferior recti muscles. Very little fluid escaped when the trephine button was removed, so the needle of the aspirating syringe was entered through the choroid, and 20 minims of serous fluid was withdrawn. The following day the patient could count "fingers at 3 feet." His vision increased so that at the end of a week it was 20/200, and the field contracted only in the upper half. He was kept in bed a week, but after he got up the detachment increased and vision failed gradually to "fingers at 4 feet." January 16, 15 minims of fluid were again aspirated, without, however, securing a reattachment of the retina. February 4, 15 minims more of fluid were aspirated. Following this aspiration, the reaction was more severe and he was put to bed and iced cloths applied to the eye. A week later the ophthalmoscope showed that a hemorrhage into the vitreous had occurred and vision was reduced to hand movements. At present the eye is white. The trephine opening can be seen as a small bluish spot. The tension is normal. The vitreous is so clouded that details of the fundus cannot be seen. The field for light perception is good.

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[8] The following case was reported in the Ophthalmic Record, February, 1915.

Besides these cases, about ten similar operations were done in old cases of detachment, most of which had lasted a year or more. It has not been thought worth while to report these cases in detail, nor was it to be expected that any marked success would be attained. However, a certain number of facts of interest have been determined.

The reaction seems entirely confined to the trephine operation and is very slight. The aspiration seems to cause no perceptible reaction, even when repeated at fairly frequent intervals, unless, as in one of the cases reported, a hemorrhage occurs following its performance. This accident seems rather unlikely to occur, however, and has not been noted in any other case.

The amount of fluid withdrawn seems to have very little influence on the amount of the reaction. In one case, 40 minims were withdrawn, and the following day the eye was hardly even flushed.

We have come to no very definite conclusion as to whether it is better to aspirate immediately or when the reaction has subsided. Where suprachoroidal fluid exists in any amount, which has been in more than half of the cases, it is perhaps as well to postpone the aspiration, but if when the trephine button has been removed no fluid comes away, showing that the entire amount is beneath the retina, it is probably as well to aspirate then and there. This course does not greatly increase the external redness of the eye, but it cannot be doubted that the lymphatic disturbance is greater when trephining and aspiration are done at the same sitting, and this point should, of course, receive due consideration.

In several of the cases, especially when the flap was not carefully dissected up in its entirety—that is to say, so as to include the conjunctiva and capsule of Tenon in one flap—the trephine opening was later found partially occluded and it was difficult to introduce the aspirating needle. In most cases, however, the opening can usually be found and the introduction of the needle is attended with but little difficulty. In conclusion, it must be emphasized that this procedure gives promise of results only in recent cases, when the light perception in the retina is still retained; when no inflammatory products are thrown out into the vitreous; when the tension is not materially reduced; and when a high degree of myopia does not exist.

A Favorable Death Rate.—Neither the state nor any of its municipalities should regard its death rate as favorable when about 50 per cent. of the deaths, according to present-day knowledge are preventable.—Rep. Pub. Health Com. Minnesota Pub. Health Assn.

SCLEROTREPHINE OPERATION FOR DETACHED RETINA

CLINICAL REPORT OF ELEVEN CASES *

WALTER R. PARKER, B.S., M.D.
DETROIT

After observing the results obtained by Colonel Elliot in treating glaucoma by his corneoscleral trephining operation, it seemed possible that scleral trephining might be utilized in the treatment of detachment of the retina.

May 19, 1913, the first operation was performed, and since that time fifteen operations have been made on eleven patients, all of which are included in this report.

Two operations were performed in Case 7, also in Case 8, and three in Case 9. In Cases 1 and 2, the sclera was trephined over the site of the detachment without incising the choroid and retina. In all the other cases, in addition to trephining the sclera, an incision with a cataract knife was made in the choroid or the choroid and retina, and the subretinal fluid, and, in most instances, a few drops of vitreous, were allowed to escape.

TECHNIC

The operation may be described in detail as follows: The conjunctiva and the underlying tissues are grasped with a pair of forceps at a point corresponding as nearly as possible to the lowest portion of the detached retina, and by a single cut with a pair of scissors, a triangular incision is made down to the sclera. Before losing the grip with the forceps a suture is passed through the apex of the triangular flap. This procedure not only enables the operator to include in the suture all the tissue incised, but affords a ready means of retraction. The suture can be held by an assistant, or a pair of artery forceps can be applied and so placed that the proper pull will be exerted to give a good view of the field of operation. After the sclera has been bared, a 2 mm. trephine opening is made, and the choroid, or choroid and retina incised in such a manner as to avoid injuring the large vessels. The free escape of the subretinal fluid may be followed by a few drops of vitreous. The needle on the suture previously passed through the apex of the flap is now passed through the subconjunctival tissues and the conjunctiva and the wound closed. A single suture on each side completes the operation. The after-treatment consists of rest in bed for ten days in such a position as to favor the replacement of the retina.

The cases are all from my service in the ophthalmic clinic of the University of Michigan, and are in no way selected.

A brief outline of the history of each case is as follows:

REPORT OF CASES

Case 1.—*History.*—The patient, N. N., female, aged 50, presented herself for examination in the ophthalmic clinic of the University of Michigan, May 12, 1913, complaining of failing vision for a year, and almost blindness for eight months.

Family history negative. Personal history, uterine prolapse and poor general health.

Examination.—Vision, right eye, 5/30; left eye, l. p., with poor projection. Tension normal in both eyes. Pupillary reflexes active to direct in right eye, and to consensual in left eye; feeble to direct in left eye and to consensual in right. Accommodative reflexes normal in both eyes. Transillumination negative.

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* Read before the Section on Ophthalmology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* On account of lack of space this paper has been abbreviated for The Journal. It will appear in full in the Transactions of the Section and in the author's reprints.

Ophthalmoscopic Examination.—Right eye: Beginning nuclear cataract; otherwise no gross lesion. Left eye: Media clear, retina detached from opposite 2, around below and up to 10, upper border of detachment being on line of junction of upper and middle third of disk. Detached portion of retina fluctuates, and the vessels can be easily traced over it.

Visual Field (Fig. 1): Candle field, taken at distance of 1 meter.

Treatment.—May 19, 1913, trephine operation for detachment of retina performed. Stephenson's trephine used; 2 mm. disk removed. Choroid not incised. Almost no reaction followed. On the eighth day patient thought sight a little better, but the gain, if present, did not hold.

June 7. No improvement seen with ophthalmoscope. Vision l. p.

June 14, 1914. Patient returns with vision l. p. and loss of projection.

Result: Failure.

DISCUSSION

This case presented an uncomplicated detachment of the retina, and except for the extent of the detachment should have been favorable for operation. The absence of reaction was doubtless due to the fact that the choroid was not incised, thus making infiltration impossible.

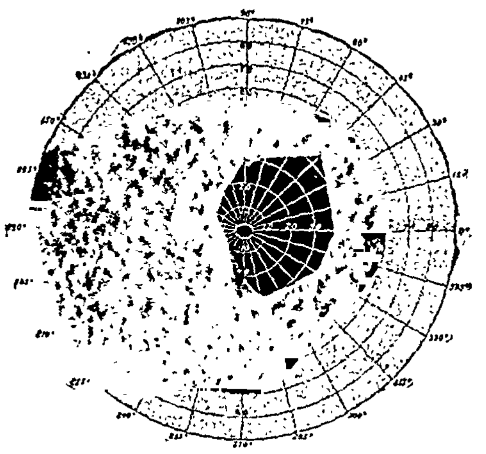

Fig. 1.—Case 1. Field before operation. May 13, 1913. Vision, light perception. Candle field. Left eye.

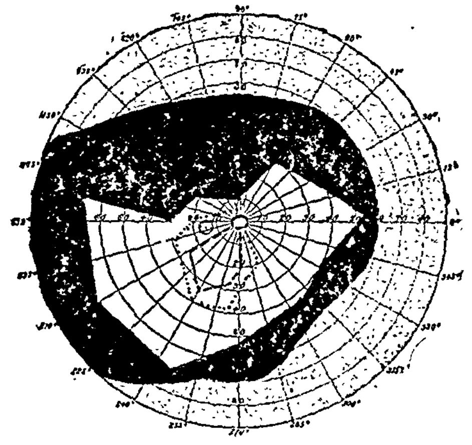

Fig. 2.—Case 2. Field before operation. Left eye. June 24, 1913. Vision, 2/60; 30 mm. object. In this and following figures solid line represents green, dotted line red, and dash line blue.

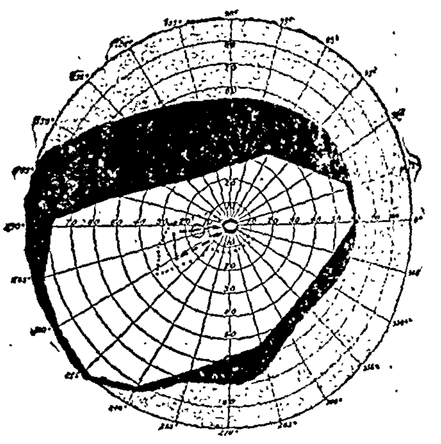

Fig. 3.—Case 2. Field after operation. Left eye. July 14, 1913. Vision, 2/60; 10 mm. object.

Case 2.—*History.*—E. T., male, aged 67, presented himself at the clinic June 23, 1913, complaining of cloud effect before the left eye coming on eight months previously. Vision now blurred; large floaters constantly present.

Family history negative. Personal history, hernia; gonorrhea thirty years ago. No history of trauma.

Examination.—Vision, right eye, 5/15; left eye, 2/60. External appearance of eye and conjunctiva normal. Pupillary reflexes active in both eyes. Tension normal. Transillumination negative. Wassermann negative.

Ophthalmoscopic Examination.—Right eye: Lenticular cortical opacities; many floating opacities in vitreous, both large and small, reticular and granular. Disk and retina edematous, foveal reflex faint; two corkscrew-like macular vessels; there were some slight atrophic changes in the choriocapillaris.

Left eye: Beginning lenticular cortical opacity; many floating opacities of vitreous, fine granular and reticular in character. Inferiorly, retina detached; nasally, detachment extends from a level above the disk slightly downward, following lower border of disk, thence temporally and upward at an angle of 45 degrees.

Diagnosis.—Right eye, incipient senile cataract. Left eye, incipient senile cataract and extensive detachment of retina, involving all except superior quadrant.

Visual Field. Field in left eye (Fig. 2) showed nearly all upper half gone, and peripheral contraction except down. Only small area below macula shows color perception.

Medical Examination.—Wassermann negative. Arterial sclerosis; blood pressure 166. Urine shows a few hyaline casts; otherwise negative.

Treatment.—July 3, 1913, trephine operation for detachment of the retina; choroid not incised.

July 11: No reaction followed the operation. No improvement in vision.

Ophthalmoscopic examination showed marked improvement in extent of detachment, the upper portion being two disk diameters below disk margin.

Form Field (Fig. 3): Slight improvement. Vision 2/60.

Result: Improvement in field. Vision unchanged.

DISCUSSION

This case presented a detachment of unknown origin of eight months' duration, complicated by degeneration of the vitreous. The choroid was not incised and no reaction followed the operation. While the vision remained the same, the visual field taken with a 10 mm. object was larger than the original one taken with a 30 mm. object.

Case 3.—*History.*—H. H.,[1] male, aged 46, came to the ophthalmic clinic of the University of Michigan September 23, 1913, complaining of a progressive loss of vision in the left eye, which began one year previously as a crescent-shaped shadow, convexity downward, in the upper part of the visual field. There had been no trauma, no pain, no photophobia.

Family and personal histories: Negative.

Examination.—Vision, right eye, 6/15; left eye, 4/60. Pupillary reflexes normal. Tension normal. No external pathology in either eye.

Ophthalmoscopic Examination.—Right eye: Some fine and reticular vitreous opacities; otherwise media clear. Physiologic depression present, lamina cribrosa showing faintly. Disk slightly edematous. Arterial reflex stripe most conspicuous in macular vessels. Arteriovenous compression with some distal dilation; foveal reflex present.

Left eye: Innumerable fine dust-like opacities in vitreous; few larger and rounded, all of same type, but variable in size. Disk hyperemic; physiologic depression present; lamina cribrosa faintly seen; scleral and choroidal rings blurred. Arterial reflex stripe conspicuous. Silver wire macular artery nearly developed just above fovea. Retina about disk hyperemic and swollen, whole retina edematous. Below fovea, retina is folded and floats free from choroid. Detachment extends from about one disk diameter below disk downward and outward as far as can be seen.

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[1] Published in Archives of Ophthalmology, September, 1914.

Visual Field. Field (Fig. 4) showed marked contraction in superior nasal portion.

Medical examination negative.

Operation.—Oct. 16, 1913, scleral trephining operation performed.

Postoperative History.—During the night the patient complained of some pain and the conjunctiva became very much congested, swollen and edematous, the chemotic conjunctiva covering the limbus completely. The eye was iced for twenty-four hours.

After five days the swelling and chemosis were greatly reduced except at the site of operation, which showed bulging for five days longer, at the end of which time the eye was quiet and the stitches were removed.

Fundus examination made three weeks after operation showed many minute granular opacities in vitreous. Whole fundus slightly hyperemic; retina somewhat edematous. Arteriovenous compression present. Superior macular vessels showed silver wire characteristics. Very slight if any foveal reflex; macular region practically normal except slightly granular about the fovea. A glistening white spot with a bright annular whitish line nearly surrounding it was seen about three or four disk diameters temporally and about one disk diameter from the fovea. No area of detachment could be discovered, the retina being apparently completely reattached.

Three weeks after operation vision in left eye 6/15, and field for form and color nearly normal in extent.

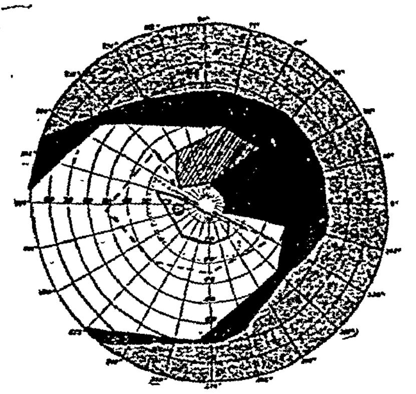
Fig. 4.—Case 3. Field before operation. Left eye. Sept. 23, 1913. Vision, 4/60; 10 mm. object.

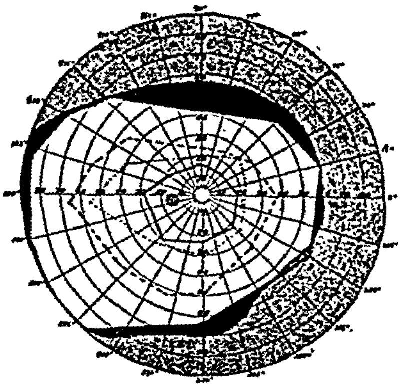
Fig. 5.—Case 3. Field after operation. Left eye. March 29, 1915. Vision, 5/7.5; 10 mm. object.

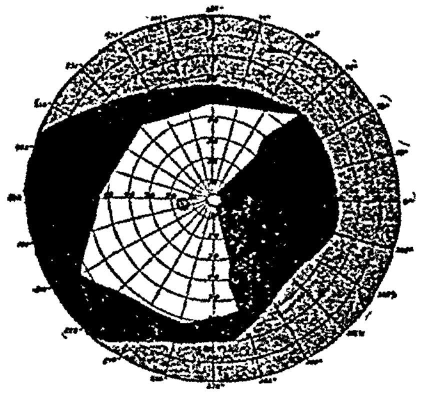
Fig. 6.—Case 4. Field before operation. Left eye. Oct. 28, 1913. Vision 1/120; candle light.

Refraction: Left eye + 0.50 sphere. Tension: Right eye, 20 mm. mercury; left eye, 20 mm. mercury.

The last observation, made seventeen months after time of operation, showed vision 6/7.5, tension 20 mm. mercury both eyes, and visual field nearly normal (Fig. 5).

Ophthalmoscopic Examination.—Same as three weeks after operation.

Result: Good after seventeen months.

DISCUSSION

The etiology in this case was unknown, although a well marked neuroretinitis was present, with many fine dust-like vitreous opacities. The detachment was of one year's duration and involved about the lower one-third of the retina. A marked reaction followed the operation and did not entirely disappear for ten days. Although there was an escape of a small amount of vitreous, no trace of an incision in the retina could be found. The vision improved from 4/60 to 6/7.5 pt. and the field to practically normal.

CASE 4.—*History.*—M. K., male, aged 62, entered the University Hospital, Oct. 15, 1913, with a history of having undergone an operation for cataract on the right eye seven years previously. On the third day a hemorrhage occurred, followed by an inflammation and loss of vision. The vision in the left eye has gradually diminished until on admission the patient was nearly blind.

Family History.—Father had cataracts in both eyes.

Personal History.—Negative.

Examination.—Vision, right eye nil, left 1/120; projection very poor. Tension, right eye, 8 mm.; left, 15 mm. Whole lens of left eye more or less granular and irregularly opaque. A well-marked iris shadow was present. Transillumination negative.

Oct. 16, 1913. Combined operation for cataract extraction. Moderate loss of fluid vitreous.

October 23. Pupil well dilated, coloboma free, eye quiet and in good condition.

Ophthalmoscopic Examination.—October 27. Left eye: Retina detached temporally and down; elevated 6 diopters; retinal vessels traced over detachment, which fluctuates with eye movements. Retinal vessels tortuous. Disk borders indistinct. Whole retina edematous.

Visual Field (Fig. 6): Large nasal and marked temporal contraction.

Nov. 21, 1913. Typical ophthalmoscopic picture of detachment of retina, including whole lower portion of globe. Transillumination negative.

November 24. Trephine operation for detachment of the retina opening in sclera, down and out. Choroid and retina incised with cataract knife after removal of scleral disk. Moderate amount of fluid escaped, followed by several drops of thin vitreous.

November 26. Slight reaction followed the operation; eye quiet.

Ophthalmoscopic Examination.—Detachment of retina more extensive.

March 29, 1914. Vision l. p. Candle field improved nasally; not changed temporally (Fig. 7).

The detachment in this case apparently followed the loss of fluid vitreous sustained at the time of operation for removal of cataract. The condition of the vitreous together with the rapid increase in the extent of the detachment from October 23 to November 21 made the case an unfavorable one for any operation.

CASE 5.—*History.*—M. B., female, aged 40, entered the hospital, Dec. 4, 1913, complaining of specks before right eye during past nine months, with progressive loss of vision. There had been no trauma, no pain or photophobia.

Family History.—Mother and one brother had cataracts.

Personal History.—Negative.

Examination.—Vision, right eye, fingers at 3 feet; left eye, 6/5. Pupillary reflexes normal; tension, right eye, 22 mm.; left eye, 24 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Lens clear, many fine vitreous opacities, mostly posterior. Disk hyperemic, lower border blurred, elevated and continuous with detachment of retina. Localized area of proliferating retinitis just outside macula, with radiating folds and bands. Whole inferior half of retina detached and drawn into folds.

Left eye: Lens clear, floating opacities of vitreous, mostly long and thread-like; slight arteriovenous compression.

Visual Field (Fig. 8): Entire absence of right upper field, with marked peripheral contraction.

Medical examination, negative.

Operation.—Dec. 11, 1913, trephine operation for detachment; choroid and retina incised. December 15, marked chemosis, extending to fornix, followed operation.

December 25, eye quiet.

Ophthalmoscopic Examination.—Retina reattached, except immediately below macula and in extreme periphery. Fields (Fig. 9) show marked improvement, excepting large scotoma corresponding to area of proliferating retinitis. Vision, fingers 6 inches.

Result: Vision same. Marked improvement in fields.

DISCUSSION

The failure to improve the vision in this case could be accounted for by the nearly central proliferative changes in the retina.

Case 6.—*History.*—E. S., female, aged 36, entered the clinic Dec. 22, 1913, complaining of loss of vision in the right eye, especially below. First noticed four years ago when it was nearly as marked as at the present time.

Family history, negative.

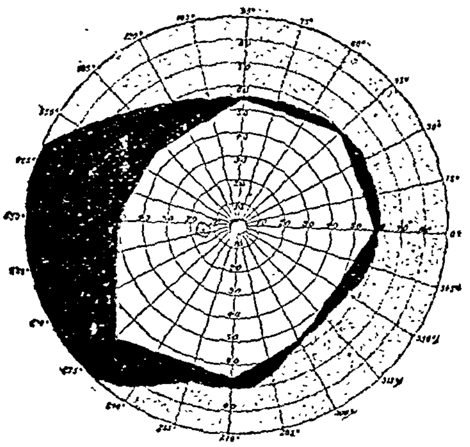

Fig. 7.—Case 4. Field after operation. Left eye. March 29, 1914. Vision, light perception. Candle field.

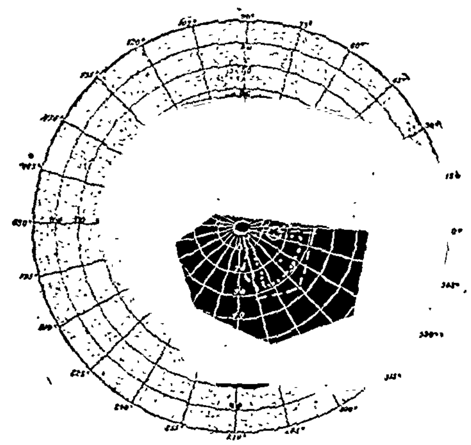

Fig. 8.—Case 5. Field before operation. Dec. 4, 1913. Vision, fingers at 3 feet; 10 mm. object.

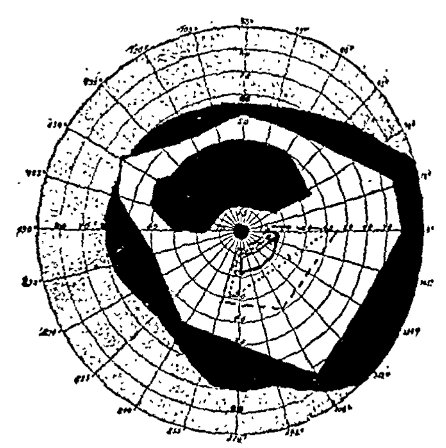

Fig. 9.—Case 5. Field after operation. Right eye. Vision, fingers at 6 inches; 10 mm. object. Dec. 22, 1913.

Personal History.—Struck in the right eye when aged 12.

Examination.—Vision, right eye, 1/60; left eye, 5/10. Pupillary reflexes normal. Tension, right eye, 16 mm.; left eye, 16 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Media clear. Disk edematous. Arteries tortuous, arteriovenous compression present. Center of fovea shows cherry red spot surrounded by grayish ring which marks beginning of an area of elevation which extends downward and outward. Area of detachment retains nearly normal color and choroidal interspaces show temporally. Both choroid and retina appear to be detached in lower outer quadrant. Left eye: No gross lesion.

Visual Field (Fig. 10): Field taken with 10 mm. object shows marked contraction for form up and nasally, and slight contraction temporally. Color fields present only in outer lower quadrant.

April 2, 1914. Admitted to hospital. On ophthalmoscopic examination the findings were confirmed.

Operation.—April 6, 1914, trephine operation for detachment of retina performed. Choroid and retina incised. The escape of a moderate amount of fluid was followed by some loss of vitreous. Slight edema of conjunctiva followed the operation.

Postoperative History.—April 8, eye quiet. Pupil well dilated.

Ophthalmoscopic Examination.—Area of detachment somewhat diminished. Whole retina more edematous. Detached area grayish in color and distinctly tesselated. Choroidal interspaces clearly seen through retina, and elevated only 3 or 4 diopters.

Visual Field (Fig. 11): Visual fields taken April 23, 1914, showed nearly complete restoration of form fields and very marked increase in size of color field. Vision, O. D. 5/60, O. S. 5/4.

DISCUSSION

The marked improvement in the visual fields in a case of detached retina of four years' duration is of special interest.

Case 7.—*History.*—J. S., male, aged 64, entered hospital, May 8, 1914, complaining of loss of vision in both eyes for the past three years, following a kick in the face by a horse.

Family history, negative.

Personal History.—No constitutional diseases.

Examination.—Vision, right eye, fingers at 3 feet; left eye, l. p. Tension normal. Transillumination negative. Right eye, well advanced senile cataract.

Ophthalmoscopic Examination.—Left eye, large number of floating opacities in vitreous. Disk outline obscured at nasal border by fold of detached retina. Arteries small, veins tortuous, marked arteriovenous compression. Retina detached throughout with exception of upper outer quadrant.

Visual Field (Fig. 12): Candle field showed marked contraction up and in.

Operation.—May 15, 1913, trephine operation for detachment of retina; opening made down and out 12 mm. from limbus. Choroid and retina incised. On second day following operation, eye quiet. Fundus could be seen with S + 1.00 diopter lens. On fourth day, detachment had reappeared and could be seen plainly with S + 7.00 diopter lens. Candle field, taken on fifteenth day after operation, nearly identical with one shown in Figure 12.

May 29, trephine operation repeated; a moderate amount of fluid escaped.

June 12. Marked reaction followed operation.

Ophthalmoscopic Examination.—Many fine vitreous opacities. Disk blurred and edematous. Retina no longer overlaps disk border, whole detachment appearing less in amount. Form field, 10 mm. object. Figure 13 shows marked increase over candle field. Vision, fingers at 3 feet.

Result: Fields improved. Vision unchanged.

DISCUSSION

The condition of the vitreous alone could account for the failure to improve the vision in this case. The final field, taken with a 10 mm. object shows a decided improvement over the first, taken with candle.

Case 8.—*History.*—D. D., male, aged 28, presented himself at the hospital May 19, 1914, complaining of rapid failure of vision in the right eye for one year. Now nearly blind. Thirteen years previously the patient was struck in left eye, which resulted in immediate loss of vision in that eye. Later a cataract developed which was removed five years prior to admission without restoration of sight.

Family history, negative.

Personal History.—Treated for syphilis.

Examination.—Vision, right eye, l. p.; left eye, blind. Projection in right eye good. Tension normal. Pupillary reflexes: Right eye reacts moderately to direct, slightly to consensual stimulation. Left reacts to consensual only.

Ophthalmoscopic Examination.—Right eye: Beginning cortical cataract. Many vitreous opacities. Disk obscured, located only by convergence of central vessels. Retina detached throughout lower half. Detached portion of retina in folds with contraction bands present, both nasally and temporally. In places, detached portion of retina nearly normal in color, giving appearance of an associated detachment of choroid. Left eye: Lens absent. Total detachment of retina.

Visual Fields: Right eye (Fig. 14), form field, taken with a 20 mm. object, showed absence of nasal field with marked peripheral contraction temporally.

Medical Examination.—Positive Wassermann. Leukoplakia and adenopathy. Given salvarsan.

Operation.—June 1, 1914, trephine operation for detachment of retina performed. Opening in sclera made down and out about 12 mm. from limbus; choroid incised. No escape of fluid followed removal of scleral button, but a large amount of amber colored fluid followed incision of choroid.

Postoperative History.—Considerable reaction followed operation, but no complications. Twenty-eight days after operation the field (Fig. 15) taken with a 20 mm. opening, was more contracted than before operation.

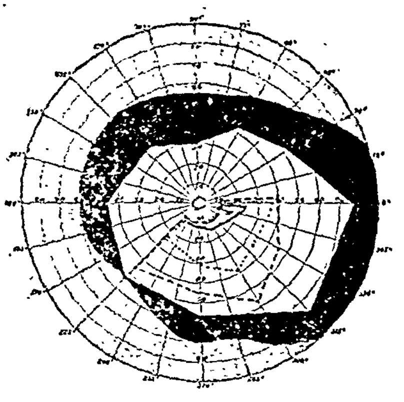

Fig. 10.—Case 6. Field before operation. Right eye. April 23, 1914. Vision, 5/60; 10 mm. object.

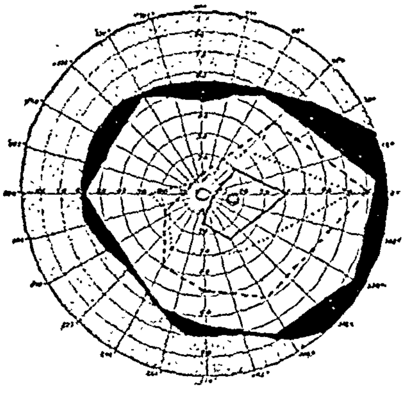

Fig. 11.—Case 6. Field after operation. Right eye. Dec. 12, 1913. Vision, 1/60; 10 mm. object.

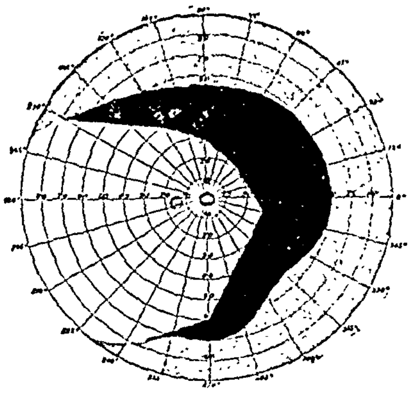

Fig. 12.—Case 7. Field before operation. Left eye. May 14, 1913. Vision, light perception. Candle field.

Nov. 12, 1914. Vision, l. p. Lens cataractous. Candle field (Fig. 16) about the same as field taken previously with 20 mm. object.

November 20. Trephine operation repeated. Marked reaction followed, but cleared up without treatment, leaving eye quiet after ten days, with the exception of some chemosis at site of trephine opening. Filtration good.

Dec. 20, 1914. Eye quiet. Vision, barely l. p. Field could not be taken, due to opacity in lens.

Result: Failure.

DISCUSSION

The condition of the vitreous, the presence of organized bands in the retina, together with the general condition of the patient, made this a most unfavorable case for operation. Apparently the formation of the cyclitic cataract was hastened by the operation.

Case 9.—*History.*—L. W., male, aged 14, presented himself at the clinic, May 19, 1914, with a history of loss of vision in left eye following blow on head three months previously. Was struck in same eye by fragment from dynamite cap three years previously.

Examination.—Vision, right eye, 5/5; left eye, l. p.; divergent, 20 degrees. Tension both eyes normal. Reflexes present, but restricted in left eye.

Roentgen-ray examination shows presence of foreign body posterior to sclera opposite superior temporal quadrant. Transillumination, negative.

Ophthalmoscopic Examination.—Right eye, normal; left, a few fine radiating lenticular opacities present. Two long organized bands (like retinal striae in appearance) hang from superior portion of vitreous; exact source not made out. Below disk several bands running downward in vitreous, similar to those seen above. Disk blurred, rings absent except down and out. Arteries contracted, veins engorged and tortuous. Central area blurred, obscuring all details. Down and nasally the retina and choroid detached 8 to 10 diopters, while down and temporally retina only detached.

Visual Fields (Fig. 17): Right eye normal. Left eye, marked contraction taken with 50 mm. object (20 mm. object not visible).

Medical history, negative.

Operation.—May 25, 1914, trephine operation for detachment of retina performed. Opening in sclera made directly down. Moderate outflow of clear fluid followed incision in choroid. Very slight reaction followed operation.

Postoperative History.—Thirteen days after operation, vision was 1/60. Field of vision (Fig. 18) much improved. Taken with 20 mm. object.

Ophthalmoscopic Examination.—Made sixteen days after operation. White bands observed at first examination unaffected. Temporally many vertical wrinkles and folds in retina. Along inferior nasal vein a striation apparent, not visible before operation. Detachment appreciably lessened below, especially temporally. Four weeks after operation detachment had same appearance as at last examination. Lamina cribrosa could be seen, however, and vision was 2/60.

July 3, 1914, thirty-nine days after operation, vision, 2/60. Field (Fig. 19) taken with 20 mm. object, more contracted above.

July 6, 1914, trephine operation repeated, opening being made down and out. Small amount of fluid escaped after incision in choroid.

July 10, 1914. Chemosis was slight.

July 25. Vision, 4/60. Field (Fig. 20) taken with 10 mm. object, much improved up and nasally.

Aug. 10, 1914. Vision, 5/60. Field (Fig. 21) taken with 10 mm. object, more contracted nasally, holding temporally.

November 8. Vision, 2/60. Detachment more marked below.

November 9. Trephine operation repeated second time. Sclera opened down and slightly cut. Moderate amount of fluid escaped after incision in choroid.

Dec. 1, 1914. Vision, 3/60. Field (Fig. 22) taken with 10 mm. object; marked contraction; somewhat smaller than first field taken with 50 mm. object. Eye quiet.

Ophthalmoscopic Examination.—Appearance same as after first operation.

Result: Slight improvement.

DISCUSSION

The organized bands in vitreous and retina made this case unfavorable from the first. The temporary improvement following the first operation led to the hope that some permanent gain might be made. The final improvement, however, was very slight.

Case 10.—*History.*—J. S., female, aged 21, presented herself at the clinic, Nov. 11, 1914, complaining of sudden total loss of vision in right eye nine days previously. After four days she could distinguish light; now sees objects. No trauma. No pain.

Examination.—Vision, right eye, fingers at 4 feet; O. S. 1/60, W. C. 6/15. Tension both eyes, normal. Pupillary reflexes: right eye, almost absent to direct, active to consensual. Left eye, active to direct, nearly absent to consensual. Both react in accommodation.

Ophthalmoscopic Examination.—Right eye: Many fine vitreous opacities. Disk indistinct, seen best with S — 12.00 D. Whole lower portion of retina detached, most elevated immediately below macular region seen with S + 5.00 D lens. Superiorly, fundus somewhat tesselated. Left eye: Media clear, disk vertically oval, seen best with S — 12.00 D. Myopic crescent along lower temporal border with myopic choroidal changes in macular region. Peripheral portion of fundus tesselated.

Visual Fields (Fig. 23): Candle field; contraction temporally and above.

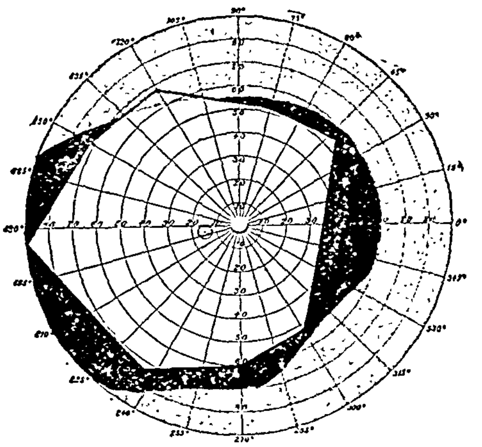
Fig. 13.—Case 7. Field after operation. Left eye. June 11, 1913. Vision, fingers at 3 feet; 10 mm. object.

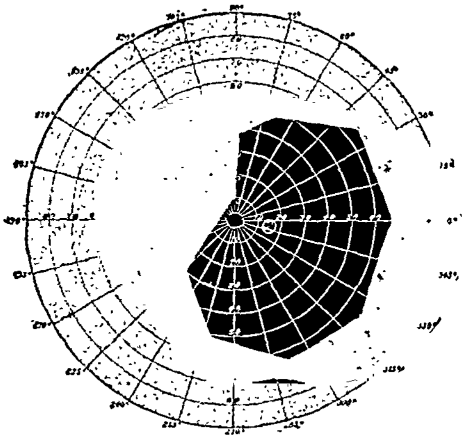
Fig. 14.—Case 8. Field before operation. Right eye. May 19, 1914. Vision, light perception; 20 mm. object.

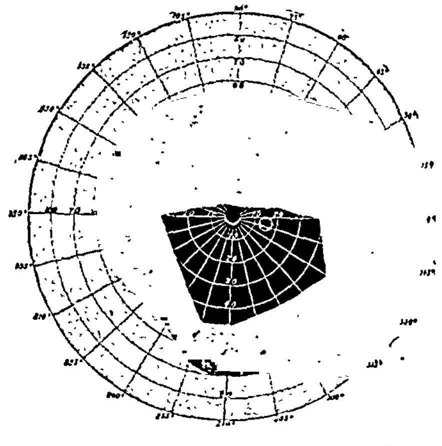
Fig. 16.—Case 8. Field after second operation. Right eye. Nov. 14, 1914. Vision, light perception. Candle.

Treatment, rest in bed.

Nov. 18, 1914. Vision, 4/60. Visual field, 10 mm. object, less contraction than former candle field. Small field for blue; red and green not attempted.

November 29. Vision, 6/40.

Ophthalmoscopic Examination.—Unchanged. Visual field not more contracted than at last examination.

Operation.—Nov. 30, 1914, trephine operation for detachment of retina performed. Scleral opening made down and out. Escape of yellowish colored fluid followed incision in choroid.

Postoperative History.—Slight injection and edema over trephine area. Twelve days after operation, eye quiet. Ophthalmoscopic examination showed marked improvement, retina replaced, excepting peripherally, down and in. Vision, 2/60.

Jan. 11, 1915. Vision, 5/60, with and without correction. Many thread-like and mossy vitreous opacities, apparently remnants of hemorrhage. Retina detached below. Fields, 10 mm. object. Practically the same as field shown in Figure 23.

March 26, 1915. Vision, right eye, fingers at 2 feet.

Ophthalmoscopic Examination. — Marked increase in extent of detachment now extending up and in, down to disk border, and up and out, to superior temporal artery, which seems to limit the detachment. Vitreous contains many fine and a few stringy opacities. Disk obscured.

Visual Field (Fig. 24): Field taken with a 10 mm. object shows marked loss in all directions, especially temporally.

Result: Failure.

DISCUSSION

The interesting feature in this case is the associated myopia. No other etiologic factor could be found as a possible cause of the detachment.

Case 11.—*History.*—M. W., female, aged 64, presented herself at the clinic, Feb. 8, 1915, complaining of loss of vision in left eye. Five months previously first noticed flashes of light before eye, which gradually disappeared. One month later, vision was practically lost for a period of from two to three weeks, when sight returned for objects, where it has since remained.

Examination.—Vision, right eye, W. C. 6/7.5. Left eye, fingers at 2 feet. External appearance of both eyes, normal. Pupillary reflexes, normal. Tension, right eye, 25 mm.; left eye, 22 mm. Transillumination negative.

Ophthalmoscopic Examination.—Right eye: Few striae in lens periphery. Few fine vitreous opacities. Peculiar flaky retinal changes of indefinite character over whole fundus. Otherwise negative. Left eye: Lens swollen and granular. Many fine reticular vitreous opacities. One large central opacity. Retina detached from just below disk border temporally and down. Peripherally detached portion of retina, grayish; centrally pale red.

Visual Fields: Right eye, slight contraction above; left eye (Fig. 25) with 30 mm. object, upper nasal half practically hemiopic. Marked peripheral contraction throughout.

Medical examination, negative.

Operation.—February 15. Trephine operation for detached retina performed. Several drops of straw-colored fluid and a small amount of vitreous followed incision of choroid and retina.

Postoperative History.—Considerable congestion and chemosis over trephine area. At end of ten days patient could see much better, counting fingers readily. No exact record made. On eleventh day, chemosis had disappeared. Apparently filtration had ceased. Vision much worse. Visual fields (Fig. 26) 10 mm. object larger than first taken with 30 mm. object. Most marked improvement nasally where hemiopic character of field had disappeared. Vision: Counts fingers at 3 feet.

DISCUSSION

The final field taken with a 10 mm. object showed a marked improvement over the first one taken with a 30 mm. object. The failure to secure a more marked improvement in vision could be accounted for, in part, at least, by the changes of the lens and vitreous.

SUMMARY OF RESULTS

Vision			Fields	
Improved	Unimproved	Made Worse	Improved	Made Worse
4	5	2	8	3

In three cases (3, 5 and 7) very good results were obtained. In Case 3 the vision was increased from

4/60 to 6/7.5 and the field almost completely restored. The last observation was made seventeen months after the time of operation. In Case 5 the field was almost completely restored except for a large central scotoma which corresponded to an area of proliferating retinitis, accounting for no increase in the acuity of central vision. In Case 7 the field was greatly improved, but the condition of the vitreous was such as to prevent improvement of vision.

The vision was made worse in two cases (4 and 10). Case 4 had a fluid vitreous, a portion of which had been lost one month previously during operation by me for the extraction of cataract. Case 10 had a high degree of myopia.

The field was made worse in three cases (1, 8 and 10). In Case 1 the detachment was very extensive and the choroid was not incised. Case 8 had contraction bands in the retina and a partial detachment of the choroid. There was also present a total detachment in the other eye and the Wassermann was positive. Case 10 had a high degree of myopia with a spontaneous detachment.

In three cases (6, 8 and 9) the detachment of the retina was associated with a partial detachment of the choroid. In Case 6 there was a slight improvement in the vision and a marked improvement in the field both for form and color. Case 8 was unfavorable for any operative procedure, while Case 9 showed slight improvement after the second operation in both vision and fields. The organized bands in the vitreous in Case 9, the result of a foreign body passing through the globe, made any marked improvement impossible.

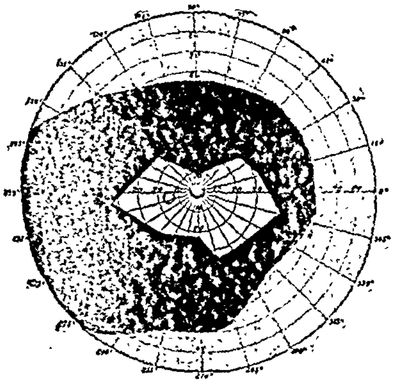

Fig. 17.—Case 9. Field before operation. Left eye. May 22, 1914. Vision, light perception; 50 mm. object.

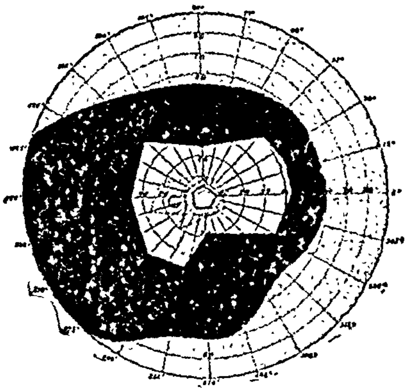

Fig. 18.—Case 9. Field after first operation. Left eye. July 7, 1914. Vision, 1/60; 20 mm. object.

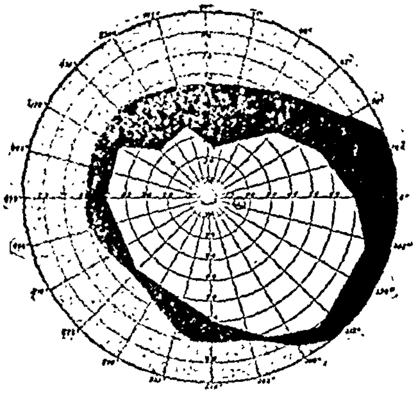

Fig. 23.—Case 10. Candle field before operation. Right eye. Nov. 29, 1914. Vision, 4/60; 10 mm. object.

In two cases (1 and 2) the choroid was not incised. In each case the vision was unchanged, while the field was slightly improved in one and made worse in the other.

The object of this operative procedure has been to secure an opening in the sclera and choroid which will allow free drainage of the subretinal fluid for a sufficient length of time to permit the retina to become reattached. If the secretory process is dormant, and all the subretinal fluid evacuated at the time of the operation, reattachment may occur without edema of the conjunctiva. But if the secretory process is active, or if any amount of the subretinal fluid is left behind, a certain amount of reaction must necessarily follow or the retina will again be separated from the choroid and failure result. In each of the cases in which a good result was obtained, the operation was followed by a marked edema which did not entirely disappear until the tenth day.

The procedure seems to be unattended by any danger, either of impairing the integrity of the globe, or, in uncomplicated cases, of increasing the extent of the detachment. On theoretical grounds at least it would seem desirable to drain off the subretinal fluid without injuring the retina. In the cases reported, however, the best results were obtained when escape of the subretinal fluid was followed by a discharge of a small amount of vitreous.

The results obtained in the eleven cases here reported, as compared with those obtained from any like number of cases previously treated, compel the author to look on the operation as one of distinct value in the treatment of detachment of the retina.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. THOMSON AND CURTIN, AND PARKER

Dr. Clinton T. Cooke, Seattle: I take direct issue with the statement that Vail's theory fits certain clinical aspects of the case. Has Vail shown conclusively that the hypotony is due to arrest of secretion and not to a free exit of aqueous through a patent ligamentum pectinatum? Minus tension is an undoubted fact. But has he shown the necessary connection between it and arrest of secretion? As to "Passive hyperemia with albuminous transudate, beneath the retina," does the assumption of the arrest of secretion and minus tension require us to assume also that the subretinal albuminous fluid is transudate, brought about mechanically, and is not an inflammatory exudate of toxic origin? It is possible for contraction of volume of the vitreous to occur in at least three ways; by a general loss of its water, by a formation of circumscribed areas or cavities in its substance, by a liquefaction of its peripheral portion, from a diffusion to it from the choroid of a toxin, or by reason of an interference with its supply of nutriment plus liquefaction. In either case its place is taken either by aqueous or by transudate or exudate, or else the sclera contracts on it. If this latter does not occur, room is afforded for the subretinal accumulation if the channels for aqueous escape are unblocked. How an albuminous transudate of choroidal origin is to bring about diffusion of water from the vitreous to the choroidal side of the retina in the face of an alleged acid reaction, I fail to see. Vail's treatment by sodium citrate is based on its alleged acid reaction. Fischer finds that even a slight acidity causes a rise in tension equal in certain concentrations to an amount sufficient "to burst the great sclera" and that the change or reaction is a most important factor in producing a rise in tension in glaucoma. I think Vail does not follow Fischer. Furthermore, I think that Fischer's work effectually disposes of Vail's theory. In my opinion, the theory of Drs. Thomson and Curtin is vastly preferable. With the rest of the paper I am in agreement, particularly where they call attention to the not infrequent association of a subchoroidal exudate with the subretinal fluid; that is, of a choroidal detachment. This accords with a case recently observed by myself and operated according to the technic of Dr. Walter Parker, in which I trephined over the site of detachment and observed the gush of fluid before puncture of the choroid. This patient secured increase of vision and partial reattachment of the retina. In the future I contemplate following the technic of the authors of this paper, although I see no reason, even in the cases of subchoroidal exudate, to defer aspiration of the subretinal fluid to a subsequent time.

Dr. Vard H. Hulen, San Francisco: The operation presented by Dr. Parker, and that described by Dr. Curtin are the same excepting the aspiration, which does not appeal to me. We are distinctly in need of some method of treatment for detachment of the retina which is really hopeful. Nothing heretofore, in my experience, has been of that nature: Dr. Parker performed his first operation within a few days of the date on which I had recommended the same procedure to a patient, the idea having occurred to me independently some time before as it probably had to others.

I have one experience only to report and it appears favorable to this operation. This patient, female, aged 46, came to me in July, 1911, stating that she had noticed a blur over her right eye for four or five years or longer. At this visit her vision was 20/70. The field, irregular, roughly; nasal 30 C.; temporal, 50 C.; up, 20 C.; down, 30 C. The eye appeared normal except that the ophthalmoscope revealed a small, typically appearing detachment of the retina above and to the temporal side, 8 diopters in elevation. While the location was not usual for detachment and the outlines exceptionally clear cut and its height rather great for its area, I proposed the usual treatment for simple detachment. Later, no constitutional or local cause having been discovered, I mentioned a growth as a possible cause of the detachment. Negative results having followed nonoperative treatment, scleral punctures were proposed. The vision having dropped to 16/200 I suggested in June, 1913, the operation as now described by Dr. Parker. The tension has always been normal and conditions unchanged excepting some increase in the detachment with floating opacities in the vitreous. Many months elapsed and then the patient returned and said great failure of vision had recently followed a pelvic operation under ether. I then found the entire lower half of the retina detached. May 10, 1915, I trephined the sclera below and to the temporal side 10 mm. from the limbus. A large quantity of typical subretinal fluid escaped on the withdrawal of the trephine. The lower detachment was completely dissipated, but the first "detachment" remained unchanged. As no reaction followed and the vision was now 10/200, I suggested as a final measure the same procedure over the site of above and this was done June 9. In sharp contrast to my first experience, the trephining was followed by the loss of no fluid, and incising the dark object through the opening caused merely a little oozing of blood and there was a feeling of resistance. I now thought the diagnosis of sarcoma of the choroid confirmed and proposed immediate enucleation. To date this has been declined though strongly urged in addition by two of our most skilled confrères. Neither of them, however, will make a positive diagnosis of tumor from their examination of this eye. The retina below remains attached, media and "tumor" unchanged, eye quiet, but the contrast in appearance of the two trephined areas calls for radical and immediate action. My experience with this case encourages me to try this operation again in cases of simple detachment. One point in the technic recommended by Dr. Parker's comparatively large experience I feel should be accepted with caution, for it may be a mistake to puncture the retina as a routine procedure. To evacuate the subretinal fluid by trephining, without injuring the retina or the loss of vitreous, the eye, I believe, has been put in the most favorable condition for recovery.

Dr. G. C. Savage, Nashville, Tenn.: Let every man bear the consequences of his own sins. I bear reproach myself for using the citrate of sodium subconjunctivally. I want to say in defense of Vail that I believe his theory is the only one that should appeal to us. Any change in the eye that will lessen the contents of the vitreous body would predispose to the detachment of the retina. The watery constituents of the eye go into the vitreous and aqueous chambers and are emitted slowly as a secretion. Any other fluid such as a transudation of serum in the eye would make the eye opaque. The ciliary glands, like any other glands of the body, might fail in secretory power, and thus fail to keep the chambers of the eye properly filled. Not knowing about Vail's line of thought I promptly wrote him that I had never cured a case. About that time a young man came from Vanderbilt University complaining of loss of vision in one eye. The diagnosis was easily made—simple detachment of the retina. I said to him if I knew the reaction of the detaching fluid I might be able to do something for him. His vision was practically nothing. He said: "Take advantage of your guess that it is acid and do whatever you want to do for me. I do not want to lose my eye." I gave the citrate of sodium by subconjunctival injection, with marvelous improvement within twelve hours. These were repeated frequently, improvement continuing. It has been about three years, and that man is now able to read ordinary print. The injection of citrate of sodium was what brought about the improvement. I concluded that something ought to be done to improve the nutrition of the eye so I gave him 1/100 grain of mercuric chlorid and 1 grain of potassium iodid after each meal. I then wrote Vail again that I was curing a case. Later I found that his theory and my practice fitted into each other perfectly. In the past three years I have had more cases of detachment of the retina than in all my other years of prac-

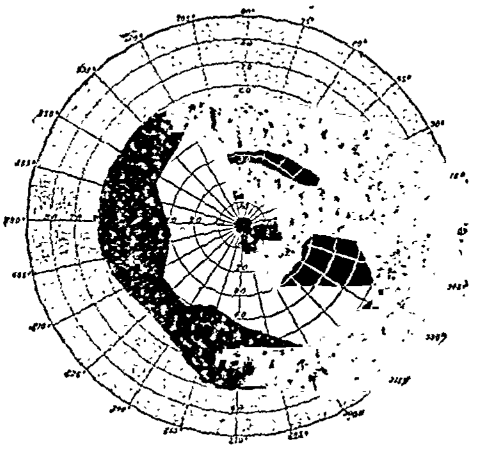

Fig. 24.—Case 10. Field four months after operation. Right eye. Vision, fingers at 2 feet; 10 mm. object.

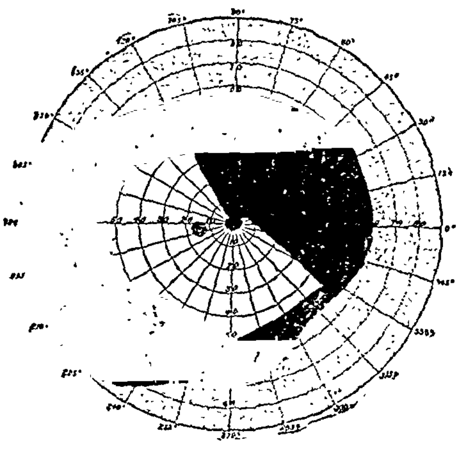

Fig. 25.—Case 11. Field before operation. Left eye. Feb. 12, 1915. Vision, fingers at 4 feet; 30 mm. object.

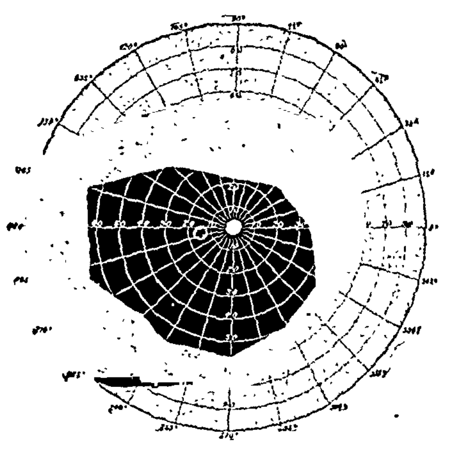

Fig. 26.—Case 11. Field one month after operation. Left eye. March 4, 1915. Vision, fingers at 3 feet; 10 mm. object.

tice. Some cases have not improved at all. Cases that had clear vitreous improved. Some improved very remarkably, others less remarkably, and I believe all patients with clear vitreous would have gotten well if they had persisted in the treatment, including the agents that I believe are best for improving the nutritive power of the ciliary body. Vail in his theory of causation is right.

Dr. Milton K. Thompson, Muskogee, Okla.: I had a peculiar case. I want to make this report and get the opinion of the elders such as Dr. Savage and others. The patient suddenly went blind. The ophthalmic examinations showed a distinct retinal detachment of a rounded character, but we did not know what nature of a tumor it was. Several of us decided it was a tumor. On questioning the young man we found that he had a specific history. We put him on treatment with neosalvarsan and inside of a month's time the tumor had gradually gone down and he had very good vision, except central, at the point of tumor where the choroidal scar showed. Now I want to know why that did that way and what condition existed?

Dr. Kaspar Pischel, San Francisco: I would like to express my gratitude to Dr. Parker for the very accurate table he has presented. He shows his failures there along with his successes—the bad as well as the good. The results are good enough for us and we should all try it. I shall certainly do so at my first opportunity. Naturally I will use the trephine or trepan in connection with the dental engine which I showed this morning. The trepan on the dental engine works so much faster and, with my stop, is so much safer that I will never return to Elliot's original hand trepan.

Dr. Thomas H. Curtin, New York: Dr. Thomson and I wish to apologize for simply recording three cases, but we have recorded only those cases which we thought were applicable for this operation, namely, recent cases of spontaneous or traumatic origin. We have operated in ten or twelve cases, however, in which from the outset we expected no results, although we have, even in these cases, had improvement in the fields of vision. Just before I left New York a patient with myopic detachment with vague light perception in the upper field, after being operated on twice, had a vision of fingers at 4 feet. In answer to Dr. Cook, I wish to say that we do not try to defend Dr. Vail's theory and have founded our belief as to the causation of retinal detachment on the results of our own clinical experience. I want to say, regarding the operation, that we think it is a bad plan to puncture the retina in any operation for the cure of retinal detachment. Holt, in 1911 in the *Transactions* of the Ophthalmic Section at Heidelberg, did trephining for myopia with and without detachment. He came to the conclusion that patients who had tears in the retina gave no results from the trephine operation. In regard to subconjunctival injections, as has been stated in the paper, we have consistently and conscientiously used them. We have tried various solutions, saline, dionin, citrate of soda, cyanid of mercury and glycerin and none of them has given us the least result.

Dr. Walter R. Parker, Detroit, Mich.: Cases of detachment of the retina due to intra-ocular tumor were not included in my report. Dr. Savage has been more fortunate in his results from subconjunctival injection than many others. Certainly if medical treatment will cure detachment of the retina, surgical interference should not be thought of. Personally I have never permanently cured a case of detachment, except by the method described in my paper. Trephining the sclera alone has been done before, but the results were unsatisfactory. My suggestion is to combine an incision of the choroid with the trephine operation.

Authority to Compel School Inspection.—The objection that the state has no right to permit or require medical inspection of the children in the schools will not bear close scrutiny or logical analysis. The authority which has the right to compel attendance at school has the added duty of insisting that no harm shall come to those who go there.—*Wisconsin State Board of Health Bulletin*, April-June, 1915.

METHODS OF WEIGHING PARTS OF THE LIVING HUMAN BODY *

C. D. SPIVAK, M.D.
DENVER

The problem which I essayed to solve can be better understood if I recite the course of reasoning I followed: A man weighing 150 pounds is placed on a certain diet and he gains 10 pounds. The question arises, How can we locate the gain? In other words: How have the 10 pounds distributed themselves over the body? Have they spread themselves uniformly through the body or not? If the additional mass has not been distributed uniformly, is there a definite relative increase in the various sections of the body? Have 3 pounds been added to the upper extremity and 7 pounds to the lower extremity or vice versa? The same question is, of course, applicable to a man who has lost 10 pounds. As far as I could trace in the available literature, not only has there never been made an attempt to solve this problem, but it has never even been propounded.

The student of metabolism differentiates between the increase in the mass of the body which takes place during the period of growth and the increase in the mass of the body which takes place after the period of growth has terminated. The first growth is a fundamental biologic property implanted in the race and transmitted by heredity. It is involuntary. The second, the increase in mass after growth has ceased, is wholly artificial and may be influenced by diet, exercise, environment, etc. It is to a great extent under control and therefore voluntary. I am concerned with the latter only.

Now, the increase in mass manifests itself in two ways, in weight and in measure. The result of the added 10 pounds has hitherto been measured by means of the scales and the tape measure. Neither of these methods is capable of throwing light on our problem. The scales show an increase in the body of 10 pounds, but they do not show where they are located. The measurements made by the tape, no matter how carefully made and how numerous, will not give even an approximate idea of the increase in the bulk either of the entire body or of a part of the body.

As the development of the art of measurement is older than the art of weighing, so has the solution of the problem dawned on me first through the glimmering light of measure.

Having evolved a method of measuring the bulk of the whole human body and of its certain parts and sections by means of the volumometer, and having also suggested the use of a new ponderal index in anthropometry,[1] I naturally turned my attention to the actual weighing of parts of the living human body. Here the difficulties, mechanical, physical and mathematical, confronted me at every step, and I have made but slow progress. I have consulted physicians, engineers and mathematicians. They all became attentive and interested, and, to use a hackneyed expression, sat up and took notice. But alas, they gave me only much warmth and but little light.

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* Because of lack of space this article is abbreviated in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints.

[1] Spivak, C. D.: The Specific Gravity of the Human Body, Arch. Int. Med., April, 1915, p. 628.

I have constructed scales for weighing parts or sections of the living human body which consist of (*a*) a board, (*b*) a stand and (*c*) two ordinary platform scales.

The board is 7 feet long and is provided on its lower surface with two transversely grooved steel bars running alongside of its margins.

The stand is made of an iron frame, the upper surface of which ends in a knife-like projection which fits into the grooves of the bars and serves as a fulcrum.

The board is placed on the fulcrum in about its middle portion, and the two scales are so placed that each of the two extremities of the board rests on or is suspended over their platforms. The scales on which the longer arm of the board is resting will indicate a certain amount of weight, and, by shifting the board to the right or to the left, one is able to adjust it so that neither of the scales will indicate any weight. The board then will be balanced, or in other words, the center of gravity of the board will have been determined. The scales represent a lever of the first order.

Now when a man weighing, say, 150 pounds, is placed on the balanced board, the upper extremities in the anatomic position, one or other of the scales will indicate a certain amount of weight. By shifting the subject to the right or to the left we are able to adjust it so that neither of the scales will indicate any weight, or, in other words, the center of gravity of the man in the horizontal position will have been determined. We then mark on the body of the subject the line of the center of gravity. We shift the subject a distance (*a*) to the right of the fulcrum, and we note the amount indicated on the right hand scales, and then we shift the subject a distance (*b*) to the left of the fulcrum, and we note the weight indicated on the left hand scales. From the known quantities (1) the weight of the entire body, (2) the center of the gravity, (3) the distance *a* and the distance *b* and (4) the two weights when the body is shifted to the right and to the left, we should be enabled to find the unknown weight of the part of the body on either side of the fulcrum. Dr. I. J. Schwatt, professor of mathematics at the University of Pennsylvania, to whom I submitted the problem was kind enough to prepare the following four equations:

Given the four equations:

$$(1)\quad W(1-d) + P_1x = W_1d + P_2y$$
$$(2)\quad W(1-d-a) + P_1(x-a) = W_2(d-a) - P_2(y+a)$$
$$(3)\quad W(1-d+a) + P_1(x+a) = W_3(d-a) + P_2(y-a)$$
$$(4)\quad P_1 + P_2 = P$$

Required to solve for the unknowns, P_1, P_2, x and y.

SOLUTION[3]

First, eliminate y, as follows:

Add (1) and (2).

$$(5)\quad \therefore W(1-d) - Wa + 2P_1x - P_1a = d(W_1 + W_2) - W_2a - P_2a$$

Add (2) and (3).

$$(6)\quad \therefore 2W(1-d) + 2P_1x = (d-a)(W_2 + W_3) - 2P_2a$$

Second, eliminate x, as follows:

Subtract (5) from (6).

$$(7)\quad \therefore a(W + P_1) = \frac{d}{a}(W_3 - W_1) - a(W_2 + W_3) + a(W_2 - P_2)$$

Solve (7) for P_1.

$$(8)\quad \therefore P_1 = \frac{d}{a}(W_3 - W_1) - (W + W_3 + P_2)$$

Substitute (8) in (4).

$$\therefore \frac{d}{a}(W_3 - W_1) - (W + W_3) - 2P_2 = P_1$$

$$\text{i. e., } P_2 = \frac{1}{2}\left\{\frac{d}{a}(W_3 - W_1) - (W + W_3 + P)\right]$$

Substitute this value for P_2 in (8).

$$\therefore P_1 = \frac{1}{2}\left[\frac{d}{a}(W_3 - W_1) - (W + W_3 - P)\right]$$

Hence from (6)

$$x = \frac{a\,[d(W_1 + W_2) - 2W(1-d) + a(W - W_2 + P)]}{d(W_3 - W_1) - a(W + W_3 - P)}$$

And from (1)

$$y = \frac{a\,[d(W_2 - W_1) + a(W - W_2 + P)]}{d(W_3 - W_1) - a(W + W_3 + P)}$$

In conclusion, I desire to beg of you to consider all that I had to say in reference to the weighing of parts of the living human body as merely preliminary. I may be right and I may be wrong. I may be wending my way to the land of the Eureka, or I may be drifting into a fool's paradise. I do not know.

1421 Court Place.

ABSTRACT OF DISCUSSION

Dr. T. Brailsford Robertson, Berkeley, Calif.: I would like to ask Dr. Spivak whether, in order to measure his new ponderal index, it is necessary totally to immerse the subject?

Dr. Joseph Erlanger, St. Louis: I would like to know how much of a factor in the measurement of the mass of the body changes in the distribution of the blood in the body may be, and also how much of a factor variation of the gaseous content of the cavities of the body may be, and whether these factors have been taken into account by Dr. Spivak?

Dr. C. D. Spivak, Denver: The new ponderal index which I recommend is made up of the old ponderal index, which represents the ratio between the height and the weight of the body in air, and the volume of the body measured in water. The new ponderal index takes cognizance of the specific gravity of the body as one of the trinity of measurements. The problem of weighing parts of the human body is to be solved by engineers and mathematicians and may be represented as follows: Given a mass of homogenous consistency, we can judge the weight of any of its parts by measuring or weighing the amount of water which that part displaces. Given a mass that is not symmetrical and not homogenous in consistency, wanted to find the weight of certain sections of that body: I claim that mathematics and mechanics will jointly come to our assistance and give us, if not the exact weight of such parts, at least an approximate weight.

The question of the specific gravity of the body has been studied very carefully, mainly by the Germans. There is an article in English by an American, a teacher of swimming, who studied the question from his particular standpoint. Professor Spitzig of Cleveland informs me that he and Rev. Frederick Odenbach of St. Ignatius College of Ohio City have carried on investigations and they have arrived at the conclusion that the specific gravity of the human body is so low that it takes only a little bit of buoyancy to keep it afloat, which is in perfect accord with my findings. The question as to whether the air in the lungs has any influence on the specific gravity has received due consideration at the hands of German investigators. It was found that the volume of air in the lungs equals the volume of air in the intestines, and consequently there is a perfect balance between the specific gravity of the two halves of the body—that above and that below the diaphragm.

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[3] The solution was kindly prepared by Dr. G. E. F. Sherwood, Professor of Mathematics, School of Mines, Golden, Colo.

CHRONIC RETENTION OF URINE IN CHILDREN [*]

EDWIN BEER, M.D.
NEW YORK

During the past five years a number of children[1] suffering from chronic vesical urinary retention have come under my observation. Invariably the condition had been unrecognized, and the children were steadily deteriorating in health. As the picture presented by these cases seems to be quite characteristic, even though the etiology of the condition may vary from case to case, I have thought it well worth while to report this series and to call attention to the syndrome.

The picture presented by these cases is very suggestive of chronic interstitial nephritis. The patients become pale and pasty. Frequently they are apathetic. Usually there is some difficulty in urination. The little patients complain of pain, or their parents note that they take a long time to complete the act. In some cases the straining is so great that the patient shows collapse symptoms with excessive pallor and weakness. On physical examination a globular mass is felt in the hypogastrium; it varies in size, but never disappears spontaneously. If infection is present, the mass may be tender. When a catheter is passed, this tumor vanishes. There is regularly residual urine. The walls of the bladder are hypertrophied, though this may not be evident late in the disease when excessive dilatation takes place. On palpation one may feel the bladder contract and become hard, behaving like the pregnant uterus. If no infection has set in, the urine may be clear, suggesting the urine in chronic interstitial nephritis. Eventually all the patients seem to become infected. As a secondary and constant development, the ureter openings become patulous and the ureters dilated. Unilateral or bilateral hydronephroses develop, and the enlarged kidney or kidneys become palpable. With infection setting in, the kidneys partake of the trouble, and infected hydronephrosis with or without multiple abscesses develops.

Neurologic examination of these patients frequently shows nothing abnormal; in others, distinct evidence of a cord or of a brain lesion is found. Even in cases in which the most complete examination fails to reveal a definite disturbance in the nervous system, postmortem examinations (three cases) have shown definite cord lesions.[2] Many of the cases without neurologic signs so closely simulate those with definite neurologic symptoms, as well as those adult cases of contracture of the neck of the bladder, due to some neuromuscular disturbance (arteriosclerosis of the cord, poliomyelitis, etc.), that, reasoning from analogy, one feels compelled to view these cases as due to neurologic disturbances, provided no local physical obstruction is present.[3]

In some cases a local examination may demonstrate an obstruction at the prepuce or in the urethra (stricture, folds, new growth). This should regularly be excluded, if possible. A minute meatus may be associated with a neuromuscular disturbance and, as in one of the following cases (Case 3), have nothing to do with the retention. The ready passage of an instrument into the bladder probably precludes the possibility of a mechanical obstruction, whereas, in conditions of sphincter spasm, such as most of these cases probably are, no obstruction is usually felt. This corresponds to the adult cases as well as to similar spasms in other parts, notably cardiospasm.[4] That the condition is frequently one of spasm (or perhaps better disharmony between the detrusor and sphincter muscles or relative hypertonicity of the sphincter) can frequently be demonstrated by passing a good-sized bougie into the bladder after the patient has voided. As soon as the sphincter is well stretched and the bougie is withdrawn, the bladder may be emptied voluntarily (except in cases with a diverticulum, etc., as Case 2). Again, that the detrusor is not paralyzed can be readily proved by starting the stream by forcible expression. After the sphincter spasm has been overcome the patients may void in a good stream.

Roentgenographic studies of these cases with silver salts will regularly show a fair-sized bladder and dilated ureters, provided the condition has lasted a sufficient time. If the cause of the retention is a diverticulum (Case 2), the Roentgen-ray cystograph will readily assist in making the diagnosis.

From the foregoing it is clear that these cases present a definite clinical picture due to varied etiologic factors. Before reporting and analyzing the series here brought together, it would be well to tabulate the etiologic factors:

1. Mechanical obstructions:
    - A. Extravesical, as congenital folds and strictures, including tight prepuce, small meatus, etc.; new growths.
    - B. Intravesical, as diverticulum of bladder, vesical stone.
2. Neuromuscular:
    - A. Brain disease.
    - B. Spinal cord disease.
    - C. Spasticity of sphincter without definite neurologic signs;[2] probably disease of sacral cord.

The cases due to extravesical obstruction are well known, and in the literature there are many examples of such cases.

Case 1.—*Chronic retention of urine; congenital stricture in penile urethra; dilatation. Cured.*—Boy, aged 7 years, since the age of 2 has been dribbling urine. Has no pain. No trauma or local disease. Physical examination shows a large, tense globular mass filling the hypogastrium. On catheterization this disappears. The meatus of the urethra is small. No neurologic symptoms are present, and no evidence of a neuromuscular disturbance can be detected. The urine is cloudy, albumin is present, also an occasional hyaline cast, and many pus and red blood cells. The Roentgen examination shows no calculus.

Meatotomy was performed, and 1½ inches behind the meatus a stricture was detected. This was stretched and kept open with an indwelling catheter (No. 12 French). October, 1913: After catheter had been used in this way for fourteen days, patient was able to empty his bladder and was discharged.

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[*] From the Mount Sinai Hospital Surgical Service.

[1] The opportunity to study three of the following cases, I owe to Drs. A. G. Gerster and H. Koplik, for which I take great pleasure in thanking them. In addition to the nine cases included in this series, I have seen several other cases belonging in this group, but as they were not adequately studied, they have been excluded from the report.

[2] Blum, V.: Zur Kenntnis der Harnretention im Kindesalter und zur Frage der Pyocyaneussepsis, Wien. med. Wchnschr., 1907, lvii, 2257.

[3] The series of cases has been so arranged as to emphasize this interpretation, which I trust will convince even in those mentioned in Legueu's paper (Arch. urol. de Necker, 1913-1914, i), where the changes in the urinary tract in these cases are attributed to a probable congenital anomaly or malformation of the ureters, etc. In Bransford Lewis' recent analysis of similar cases in adults (Prostatic Obstruction and Vesical Atony, Ann. Surg., March, 1915) he announces the same conclusions which I have reached.

[4] The analogy between cases of cardiospasm and those under discussion is quite striking. An esophageal probe, stomach tube, etc., can be passed over a silk thread (Mixter technic) through the spastic cardia without the operator detecting any obstruction. Here, too, the obstruction leads to dilatation of the passage above, and the dilated hypertrophied esophagus may assume enormous proportions.

Much rarer are cases of chronic retention due to intrinsic conditions, as diverticula, which is well illustrated in Case 2.

Case 2.—*Chronic retention of urine; diverticulum of bladder; excision; reimplantation of left ureter. Cured.*—Boy, aged 10 years, five or six days before admission had slight terminal hematuria and pain on urinating. He feels that he cannot empty his bladder. Has some pain in hypogastrium. The patient is markedly pale. The hypogastrium is filled by a globular mass which does not disappear completely after urination. There are a penile hypospadias and slight right lumbar tenderness. The neurologic status is negative. The urine is turbid, and contains a heavy trace of albumin, much pus and many epithelial cells. The residual urine is between 60 and 90 c.c. Phenolphthalein test shows 45 per cent. excretion in two hours.

March, 1915: Argyrol cystograph shows a well-developed diverticulum of the bladder and a dilated right ureter. The diverticulum is as large as a peach, and appears to be a little to the left of the midline and behind the bladder.

March 24, 1915: Cystoscopy shows that the right ureter meatus is patulous. Near site of left ureteral meatus is the opening of the diverticulum. The left ureter seems to open into the diverticulum close to the mesial lip, as indicated by the discharge of indigocarmin in good concentration. The right kidney excretes a good stream well colored at fourteen minutes.

March 27, 1915: Extraperitoneal excision of diverticulum of bladder and reimplantation of left ureter in bladder. The bladder was exposed in the usual way through a suprapubic incision, and dissected free from the peritoneal covering. The bladder was gradually drawn into the wound, and the diverticulum found to lie between the trigon and the rectum. As the lower 1 inch of the left ureter was intimately adherent to the diverticulum, it had to be sacrificed and excised with the inflamed diverticulum. The position of this pouch was such that, whenever it was full, it compressed both ureters, and in that way induced bilateral hydro-ureter (and nephrosis). At operation both ureters showed evidence of this, and the left was found markedly dilated. (Roentgenoscopy revealed condition on right side.) The ureter (left) was implanted in the posterior wall after ligating the neck of the diverticulum and burying it in the bladder wall. A suprapubic Kader cystostomy for drainage was made, and when the drainage tube was withdrawn, the cystostomy opening (valvular) closed at once without leakage.

April 26, 1915: Urine is clear. Bladder is completely emptied and patient is absolutely well.

May 12, 1915: Cystoscopy shows excellent function of the ureteroneostomy, which looks like a small, red, nipple-shaped protrusion of mucous membrane on posterior wall, and through its central lumen an intense stream of indigocarmin is emitted in normal fashion.

As illustrative of the neuromuscular group of cases with retention of urine due to a definite discoverable lesion in the nervous system, let me cite the following case under Group 2 A, due to cerebral disease:

Case 3.—*Retention of urine; Little's disease; spastic sphincter of bladder.*—Boy, aged 6 years, complained of difficulty in urinating. Patient was born by face presentation, asphyctic, remaining so for one and one-half hours. Anuria followed, lasting a week (?), and thereafter dribbling. At 2 years of age there was pain on urination. At 3 years of age he began to walk. Parents noticed that left side of body was weak. Patient must urinate frequently and strains so hard as to cause weakness, pallor and general distress. He was an underdeveloped, pale, pasty-looking boy, suggesting chronic nephritis.

Local examination showed a small meatus. In hypogastrium was a hard tumor, extending well up to the umbilicus. It disappeared on catheterization. Meatotomy was performed without changing the condition. Kidneys were negative.

Neurologic examination revealed weakness of left side of body, bilateral Babinski, apparently the residue of a Little's (or left cerebral hemiparesis).

Cystoscopy May, 1912, revealed a trabeculated bladder. Delayed excretion of indigocarmin in feeble concentration.

A diagnosis of retention of urine due to neuromuscular disturbance (sphincter spasm of cerebral origin [Little's]) was made. Diminished kidney function (beginning bilateral hydro-ureter and hydronephrosis).

An attempt was made in this case to overcome the spastic sphincter by progressive dilatation with bougies. After these had been passed, the patient was able to empty his bladder. This was kept up for some time, No. 18 French being used.

March, 1915: Patient was again seen. He had the peculiar pallid appearance of a nephritic. Bladder was two-thirds to umbilicus, and on straining the patient could void only one-half ounce of urine, which was perfectly clear. Neurologic signs of left hemiparesis persisted.

The following case illustrates very satisfactorily the group in which the chronic retention is associated with a well-marked and readily detectable spinal cord lesion, or Group 2 B.

Case 4.—*Retention of urine; incomplete transverse myelitis.*—Boy, aged 11 days, was born by foot presentation, and was delivered by traction (midwife). On the eleventh day parents noticed that he failed to pass urine. Physical examination showed a large globular hypogastric mass which disappeared on catheterization.

Neurologic examination revealed both lower extremities paralyzed. The flat muscles of the abdominal wall, especially on the right side, were paralyzed. Bilateral Babinski and exaggerated knee jerks were readily elicited. Examination of the spine was negative. Subsequent Roentgen examination of the spine was also negative.

Owing to absolute retention, the little patient had to be catheterized every twelve hours for several weeks, when some urine (overflow?) was voided. Catheter always entered without striking an obstruction. When the patient was 3 months old there was slight improvement in the neurologic symptoms, but no marked change in urinary retention. The bladder was always palpable, filling the hypogastrium; it contracted firmly under the palpating hand, and on pressure urine could be expressed. As soon as the stream was started, that is, the spastic sphincter overcome, the baby was able to void in a good stream. The urine up to date shows no sign of infection of the urinary tract.

In my experience, by far the largest group of cases of chronic retention of urine in children shows no other symptoms referable to the nervous system, though in the only two cases hitherto recorded which have come to complete necropsy, the sacral segments of the spinal cord showed definite lesions:

Case 5 (v. Blum, Frankl-Hochwart).[2]—Boy, aged 13 years, wets himself day and night. When 3 years old he had acute attack with tonic and clonic spasms, unconsciousness and urticaria. This lasted one day. He was always weakly and nervous. In the fifth year, he fractured his frontal bone above the right eye and had concussion. Then he was four weeks in bed. Subsequently he had scarlet fever. No disturbance in urination was noted until tenth year, when increased frequency and urgency developed. When 11½ years old, there was hematuria with pains in kidney regions. This disappeared after rest, but ever since there has been incontinence with dribbling and hypogastric pain.

Physical examination, Jan. 21, 1907, reveals an underdeveloped boy, looking about 6 or 7 years old. Pallor of skin and mucous membranes. In hypogastrium there is a rounded protrusion extending above umbilicus, produced by a full bladder. No obstruction to catheter's passage through urethra (No. 14 French). Urine is clear, no albumin, specific gravity 1.006; microscopically, many leukocytes and flat epithelial cells.

Neurologic status is negative except for exaggeration of knee jerks and ankle clonus. On passing catheter into bladder, patient voided 200 c.c. under good pressure, and on withdrawing catheter, patient voided another 40 c.c. in good strong stream.

Patient became infected and died of pyocyaneus sepsis.

Necropsy showed no obstruction in the urethra, cystitis, bilateral infected hydro-ureters and hydronephrosis together with other septic foci.

In the spinal cord (Professor Obersteiner) definite changes were found in the lower sacral segments (see original). These consisted of pathologic changes in the anterior cornua as well as of a congenital anomaly of the central canal.

Case 6 (Frankl-Hochwart).—Boy, aged 15 years, antecedents psychopathic. Patient weakly, underdeveloped? As a child had enuresis. Since one year, pains in glans penis and incontinence. Bladder was chronically distended and was expressible. Uremia led to death.

In posterior urethra, necropsy revealed a moderately developed *semilunar* fold (apparently out of proportion to the symptoms). Trabeculated bladder, dilatation of both ureters and pelves of kidneys. Spinal cord shows moderate dilatation of central canal and definite degenerative changes in the anterior cornua, second to fifth sacral segments.

The close analogy between these cases and those which follow, as well as the observation of similar spastic sphincter activities in adults in connection with spinal cord disease, suggests very strongly that the cases of Group 2 C are due to isolated disease of the sacral cord (sympathetic centers?).[5] Until we obtain more necropsies of these cases, the final proof will be lacking. Unfortunately, up to date I have been able to obtain only one cord (but no peripheral nerves, etc.) in this type of case (Case 8), and though this was not complete, the evidence it offers is very striking and corroborative of the foregoing point of view.

The end-result of all these cases, if nothing is done to relieve them, is infection of the kidneys and death. Under this Group, 2 C, I wish to describe briefly five cases. The first case presented some signs of a neurologic disturbance, and serves as a good link between Group 2 B and Group 2 C.

Case 7.—*Chronic retention of urine; bilateral pyonephroses; uremia.*—Man, aged 23, was very small at birth ("as long as a spoon") and was blue. Great efforts had been made to keep the patient alive. He was always very feeble. For fifteen years prior to his death his urine had been milky. Examinations showed this due to pus. Of late there had been some pain on urination and some bleeding. During the six months prior to his death, he began to show signs of failing kidney function, increasing pallor, drowsiness, weakness and apathy.

Patient was admitted in wretched shape. Respirations were exceedingly frequent and fairly deep and noisy. Pulse very feeble. Mind perfectly clear. General twitchings; very little urine secreted. Blood pressure 145 mm. Blood urea markedly increased. Cerebrospinal fluid was clear. Urine was full of pus; no sugar and no acetone.

Neurologic examination revealed both knee jerks markedly exaggerated; there were bilateral ankle clonus, left-sided Babinski and bilateral Kernig. Wassermann positive.

The patient soon became unconscious and died uremic.

Necropsy showed marked hypertrophy of the bladder, which was trabeculated and inflamed. The ureter openings were patulous, and both ureters and kidneys distended and infected (bilateral infected hydronephrosis). Careful examination of the urethra showed no mechanical obstruction. Unfortunately, the cord could not be examined.

Case 8.—*Chronic retention of urine; pyo-ureteronephrosis.*—Boy, aged 4½ years, has always had bladder trouble, more or less retention and dribbling. Hypogastric mass noted two weeks before admission. Passes urine frequently and has marked thirst. Two weeks ago fell down and after that parents first noted distended bladder.

Physical examination reveals a pale, underdeveloped child, with aged facies. In hypogastrium an ovoid mass, tense, elastic, feeling like a full bladder. Urine can be expressed by pressure on mass.

Neurologic status is negative.

Temperature is from 102.4 to 103.8 F.

Roentgenoscopy of spine for *spina bifida occulta*[6] was negative.

To relieve condition, patient was catheterized regularly, and from 250 to 450 c.c. were obtained.

Repeated attempts to relieve the spasm at the bladder neck with papaverin (from one-fifth to one-half grain) failed. Residual urine remained between 4 and 5 ounces.

Patient began to have higher temperatures, and a permanent catheter had to be inserted. No obstruction was encountered at any time in passing catheters. Subsequently patient developed right costovertebral tenderness, and urine became more and more turbid. Phenolphthalein test 15 per cent. in two hours.

Patient lost ground rapidly and died within two weeks of admission, despite permanent catheter and bidaily or daily irrigations.

No complete necropsy was permitted, but a small part of the lower spinal cord was obtained and examined by Dr. I. Strauss, who reports as follows:

There is a degeneration of both pyramidal tracts. The sections are about third, fourth and fifth sacral segments. Sections of the cauda equina show no root degeneration.

Case 9.—*Chronic retention; hypertrophied bladder; bilateral hydronephroses.*—Boy, aged 15 months. Physical examination reveals a globular tumor mass in the hypogastrium. It is always present except when emptied by a catheter, that is, distended, hypertrophied bladder. In left lumbar region is a mass corresponding to the position of the kidney. This is probably a hydronephrotic organ. No neurologic symptoms were elicited.

Cystoscopy (February, 1912) reveals bladder trabeculated, otherwise normal. No obstruction in urethra. Indigocarmin does not appear until four and three-quarters hours after injection, which suggests a bilateral kidney involvement.

Diagnosis of chronic retention, hypertrophied bladder, bilateral (probably) hydronephroses, due to spasm of vesical sphincter.

Case 10.—*Chronic retention of urine; pyonephrosis.*—Boy, aged 5½ months. Normal birth in 1910. Globular tender mass presented in hypogastrium, a trifle more marked on right side than on left. With the impression that this was an abscess (appendicular), an exploratory incision was made. This incision demonstrated that the tumor was a full bladder, and it was emptied with a catheter. The bladder filled again and remained distended throughout our observations; residual urine approximately 60 c.c. Later a mass developed in the *left kidney* region which proved to be an infected pyonephrosis.

No neurologic symptoms were elicited.

Case 11.—*Chronic retention; bilateral infected hydro-ureters and hydronephroses.*[7]—Boy, aged 5 years, had a fever four months before admission. Shortly thereafter there were blood in urine and in stools (prolapse?), and pain in right lumbar region. Condition had gradually become worse.

Physical examination was negative. No neurologic symptoms were elicited. Urine contained pus and pyocyaneus bacilli.

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[5] In patients who have had infectious diseases, for instance, diphtheria, in making the diagnosis the possibility of a detrusor weakness due to chronic peripheral neuritis should be borne in mind.

[6] Compare case of Muchamisky: Urolog. Jahrb., 1913, p. 403.

[7] This case has been rather fully reported by Henry Heiman: A Case of Bilateral Hydroureter, Chronic Pyocyaneus Infection, Arch. Pediat., November, 1913, and by Leo Buerger: Congenital Hydroureter and Hydronephrosis, Internat. Clin., iv, Series 24.

Aug. 16, 1911: Cystoscopy and bilateral ureter catheterization. Bladder full of purulent urine washed clean before introduction of small cystoscope. Left ureter opening is patulous and seen to discharge purulent urine (infected hydronephrosis, tuberculosis?). Right ureter meatus is slit-shaped, normal. Indigocarmin excretion is negative in forty-five minutes, speaking probably for a bilateral renal involvement. Both ureters catheterized. Urine from right kidney was clear, from left, many pus cells, no tubercle bacilli, no growth on culture mediums.

As repeated examinations failed to show tubercle bacilli, the patient was treated with bladder irrigations, and urine became less purulent. Autogenous vaccines (from bladder urine) were also employed.

In August, 1912, the child was again admitted. There was a residual urine of 4 or 5 ounces, and urine was turbid with pus.

Almost fourteen months after the first cystoscopy, the second examination was made (Dr. Buerger), and it demonstrated that the condition had progressed. Both ureter openings were now patulous. The left orifice was enormously dilated; the right was also very much enlarged, although it still retained some of the natural outline of a normal ureteral orifice.

The development of the same condition on the right side as had existed fourteen months earlier on the left suggested bilateral hydronephroses and hydro-ureters, and with the aid of an argyrol roentgenogram, this was beautifully verified. At no time did we obtain any evidence of obstruction in the urethra, as all instruments passed into the bladder readily.

The condition of the patient gradually became worse, and in July, 1914, he died.

Necropsy (incomplete) showed bilateral infected hydronephroses. The left kidney was more enlarged than the right and was full of pus. The ureters were also markedly distended and tortuous. Both meatus were much dilated. The bladder was very much dilated, looking like an enormously enlarged adult bladder, and its walls were thinned. The urethra showed nothing abnormal.

Before saying a few words concerning the therapy in these cases, the question arises as to whether a unilateral renal involvement may obtain in this condition. Judging from the cystoscopic examination as well as from the urinary and necropsy findings in Case 11 as well as the course of Case 10, it would seem that the process for a time might be limited to one side or asymmetrically developed. This is of importance in trying to understand a case recently reported from Zuckerkandl's clinic by Bachrach:[8]

Case 12 (Bachrach).—Woman, aged 27, since childhood never urinated normally. Had to strain and wait at times one-half hour before finishing the act. After exposure, developed cystitis with right kidney pains.

Physical examination showed feeble, atrophic patient. Bladder extended 3 inches above symphysis. Catheter entered easily.

Cystoscopy revealed bladder inflamed, and trabecular hypertrophy with multiple diverticula. Left ureter meatus was normal, whereas the right ureter meatus was patulous. (No neurologic status mentioned.)

Collargol cystograph showed ascent of silver into right dilated ureter and pelvis.

Diagnosis: Infected hydronephrosis and hydro-ureter with "atonic" (Schlaffer) dilatation of vesical orifice.

This case showed what appears to be, but is not definitely proved to be, a unilateral involvement ascribed to atony by the author, basing his interpretation on J. Israel's conception of dynamic as opposed to mechanical obstructions. And this, despite the fact that he states that Israel believes such dilatations follow the repeated futile attempts of the contracting bladder[9] to empty itself in a normal way. The increased intravesical pressure forces one or both ureter openings: ureteral dilatation develops. Superimposed vesical infection probably hastens the process. In Bachrach's case, strange to say, no neurologic data are given. A survey of the essential facts of this incompletely described case will demonstrate a close similarity to the cases reported under Group 2 C. The second case reported in Bachrach's paper, also without neurologic status, presented a picture similar to my cases with bilateral hydro-ureter and hydronephrosis, and seems to belong in this group.[10]

Case 13 (Bachrach).—Girl, aged 16. Up to fourteenth year nocturnal enuresis. Since beginning of menses that has ceased, but there is difficulty in urinating. After exposure, urine became turbid and frequency developed (every ten minutes).

Physical examination reveals signs of incomplete urinary retention in bladder. Urine is cloudy with pus. Combined kidney function is lowered. (Indigocarmin in thirty-five minutes.)

Cystoscopy reveals trabeculated, inflamed bladder with numerous diverticula. Both ureter openings are widely patulous. Catheterization of ureters reveals a residual urine of from 100 to 120 gm. (partly reflux?).

Roentgenoscopy with collargol reveals ascent of silver salts into dilated ureters and pelves from bladder.

Diagnosis: Bilateral infected hydronephrosis and hydro-ureters with atonic dilatation of ureters.

THERAPY

When we come to treatment of these cases, a distinction must be made between Groups 1 and 2. In cases belonging to the former group, much can be accomplished. Mechanical obstruction, intrinsic and extrinsic, can usually be obviated. If such strictures cannot be reached through the bladder or the perineum, which will be seldom, if ever, a temporizing cystostomy operation will be in place. In cases belonging to Group 2, therapy is pretty well baffled. Medicinal treatment, for example, potassium iodid, perhaps mercury, and antispasmodics (papaverin) will have to be tried, together with dilatation of the sphincter; and if all attempts fail, a cystostomy will be indicated, perineal or suprapubic, with section of the bladder's neck. This operation should be done to save the progressive changes in the ureters and kidneys. Should a kidney become infected, it should be nephrotomized rather than taken out, whenever feasible, in view of the usual symmetrical development of the disease.[11]

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[8] Bachrach, R.: Ueber atonische Dilatation des Nierenbeckens und Harnleiter, Beitr. z. klin. Chir., 1913, lxxxviii.

[9] Frequently seen in various types of cystitis as well as in neuromuscular disturbances.

[10] There are a number of other cases in the literature which appear to fall into Group 2 C, for example, J. Daland's case cited by Osler, in his Practice. From personal communication, Jan. 29, 1915, I learn that no obstruction was found, and the patient had the usual bilateral hydro-ureteronephroses. Unfortunately, no cord examination was made. E. Holt (Diseases of Infancy and Childhood, 1898) describes 8 cases of hydronephroses in 726 consecutive necropsies. In a series of 10 cases, in 7 only the left side was affected, and in 3 both sides. He says this condition is due to obstruction in ureter, bladder, urethra or prepuce, but in only 3 cases could sufficient or adequate obstruction be demonstrated. Double hydronephroses of congenital type result in death within the first year.

[11] In addition to the references already given, the following will be found of interest:

Walker, J. W. T.: Atony of the Bladder without Obstruction or Signs of Organic Nervous Disease, Ann. Surg., 1910, lii, 577.

Burkhardt, E.: Handbuch für Urologie, 1906, iii, 1.

C. G. Cumston (Ann. Surg., November, 1910) cites Edes' cases.

A STUDY OF IMMUNITY FOLLOWING THE USE OF TYPHOID VACCINES AND SEROBACTERINS

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In order to gain more information regarding the immunizing value of the various sensitized and nonsensitized typhoid vaccines in use at the present time, a series of experiments on rabbits was undertaken. Following the inoculation with such vaccines, blood was withdrawn at regular intervals, and estimations of the opsonic index and the agglutinating and bactericidal powers were made.

HISTORICAL

Clinicians are generally agreed regarding the immunizing value of typhoid vaccines and serobacterins, and such reports as those of Major Russell, of the U. S. Army, and the numerous data from other armies and institutions are convincing. Occasional failures to obtain immunity, as reported by Trowbridge, Finkle and Barnard,[1] may perhaps be explained by the use of a vaccine improperly prepared or improperly administered.

There is a discord in the opinions of men treating typhoid with vaccines. On the one side we have Elmer[2] and others condemning, and on the other Krumbhaar and Richardson[3] (who collected reports of 1,806 cases) and others recommending their use.

No good index of immunity exists, but a great deal of careful work has been done to throw light on the subject. Estimations of the immune bodies in the blood following the injections of vaccines have been made. In man, Wollstein[4] shows the height of the bactericidal power, and Moon,[5] Wade and McDaniels,[6] and Dyer[7] the height of the agglutinating power to be about two months after the first dose of vaccines. Some serums were negative as early as four months after the first injection, and most of them negative within one year. Still, we know that immunity usually outlasts this period. This resistance is probably due to a degree of sensitization of the body cells. It is also known that persons who have had typhoid fever previously react severely to immunization with typhoid vaccines, probably for the reason just given.

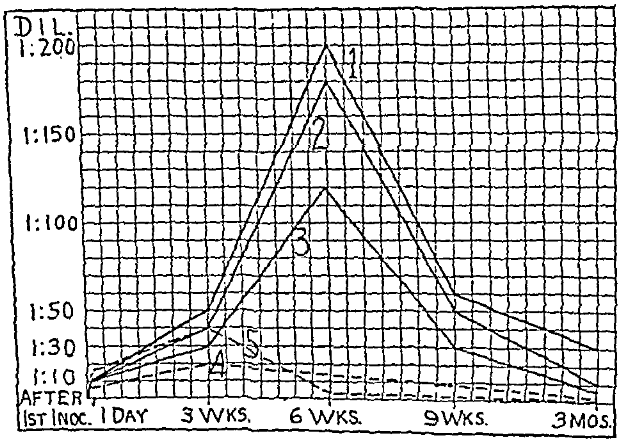

Chart 1.—Agglutinins.

Animal experimentation, though small, has largely borne out the foregoing data obtained from human serum. Freshly isolated cultures of *Bacillus typhosus* do not agglutinate as readily as subcultures, but McIntosh and McQueen,[8] and Gay and Claypole[9] found that inagglutinable strains, when injected into animals, led to the production of typhoid agglutinins which had no action on themselves but agglutinated heterologous strains freely. Johnston[10] found an increase in the bactericidins and a rise in the opsonic index to 4.7 following typhoid vaccination in rabbits. Thus, although there is of necessity a difference in the reactions found in human as opposed to rabbit blood, there is also an analogy.

It has been found by Cecil[11] and Stone[12] that vaccines killed by the addition of phenol (carbolic acid) or tricresol are more potent than those killed by exposure to heat. Cecil[11] also found that sensitized typhoid vaccines when injected *intravenously* have only one-third the virulence of nonsensitized typhoid bacilli, probably because the former undergo phagocytosis and bacteriolysis more rapidly.

The Besredka sensitized living typhoid vaccine is apparently most active. It does not produce typhoid fever or typhoid carriers if the strain is an old one, as shown by Nichols,[13] Castellani,[14] Metchnikoff and Besredka,[15] the latter having been unable to immunize chimpanzees except with this type of vaccine. In 745 persons whom they vaccinated, no carriers and no cases of typhoid developed.

Nègre,[16] working with rabbits, found that after the use of ether-killed vaccine the serums showed a very high agglutinating power with low bactericidins and antibodies, whereas the living sensitized vaccine produced low agglutinins but high bactericidins and antibodies. Typhoid vaccine killed by heat produced high agglutinins and low bactericidins.

MATERIALS AND METHODS

For this study, twelve rabbits from two litters of about the same age and weight were taken. Two rabbits served as controls, and the remaining ten were divided into pairs, one rabbit from each litter, and were injected *intravenously with the following* vaccines:

Vaccine 1: This vaccine was prepared by growing typhoid bacilli on agar slants for twenty-four hours, washing off the growth with salt solution, and then killing and standardizing in 0.6 per cent. phenol.

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[1] Trowbridge, E. H.; Finkle, B. A., and Barnard, E. M.: Report of Typhoid Epidemic Occurring Three Months After the use of Prophylactic Vaccine, THE JOURNAL A. M. A., Feb. 27, 1915, p. 728.

[2] Elmer, W. P.: Study of a Recent Typhoid Epidemic, with Especial Reference to the Use of Antityphoid Vaccines, THE JOURNAL A. M. A., April 3, 1915, p. 1147.

[3] Krumbhaar, E. B., and Richardson, R.: Am. Jour. Med. Sc., 1915, cxlix, 406.

[4] Wollstein, Martha: Jour. Exper. Med., 1912, xvi, 315.

[5] Moon, V. H.: Experimental Immunity in Relation to the Agglutination Reaction in Typhoid, THE JOURNAL A. M. A., June 7, 1913, p. 1764; Jour. Infect. Dis., 1914, xiv, 56.

[6] Wade, E. M., and McDaniels, O.: Am. Jour. Pub. Health, 1915, v, 136.

[7] Dyer, A. W.: Indian Jour. Med. Research, Calcutta, April 1, 1914.

[8] McIntosh, J., and McQueen, J. M.: Jour. Hyg., 1914, xiii, 409.

[9] Gay, F. P., and Claypole, E. J.: Induced Variations in the Agglutinability of Bacillus Typhosus, THE JOURNAL A. M. A., April 12, 1913, p. 1141.

[10] Johnston, J. A.: Jour. Med. Research, 1912-1913, xxvii, 177.

[11] Cecil, R. L.: Jour. Infect. Dis., 1915, xvi, 26.

[12] Stone, W. J.: Typhoid Immunity and Antityphoid Inoculation, THE JOURNAL A. M. A., Oct. 16, 1909, p. 1253.

[13] *Nichols, H. J.*: Jour. Exper. Med., 1914, xx, 573.

[14] Castellani: Lancet, London, Aug. 21, 1909.

[15] Metchnikoff and Besredka: Ann. de l'Inst. Pasteur, March 25, 1911.

[16] Nègre: Compt. rend. Soc. de biol., 1913, lxxiv, 1177.

Vaccine 2: This vaccine was made as Vaccine 1, but killed by heating at 56 C. (132.8 F.) for one hour, and then standardized in 0.4 per cent. phenol.

Vaccine 3: This vaccine was made as Vaccine 2, but before the bacilli were killed they were washed till the filtrate gave a biuret negative test.

These three vaccines were made from the same strain of typhoid bacillus and standardized by the hemocytometer method, the Helber blood-platelet counter being used. Injections of 500 million, 1,000 million and 1,000 million were given at weekly intervals.

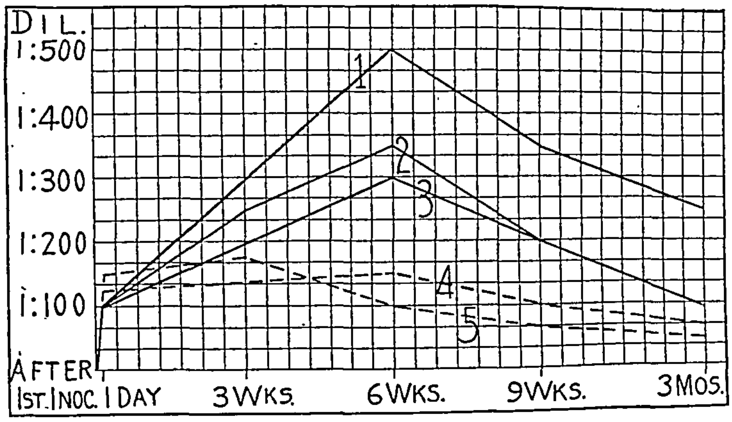

Chart 2.—Bactericidins.

Vaccine 4: This vaccine was kindly furnished by the California State Board of Health. It is sensitized vaccine made according to the method of Gay and Claypole, and given according to their directions in three doses of approximately 750 million typhoid bacilli every other day.

Vaccine 5: This vaccine was the Typho-Serobacterin Mulford immunizing package, bought in the open market. It was administered according to the directions accompanying the package.

The rabbits were kept separated and were fed alike. Rectal temperatures were taken and blood collected at regular intervals. The rabbit's ear was flipped vigorously for a few minutes, washed with xylene and alcohol, and one of the marginal veins punctured; in this way sufficient blood for the test was easily secured. The bacteriologic tests were made on the same day that the blood was drawn.

General reactions, such as a fever of from 2 to 2.5 degrees and loss of appetite for two or three days, occurred in all four rabbits receiving Vaccines 1 and 2, but only after the first injection. There was a slighter reaction in one of the rabbits receiving Vaccine 3, and in the other rabbits receiving the same vaccine the reaction was mild, extending only over the day of administration of the vaccine. There was no general reaction after any succeeding doses, neither was there any sign of general reaction in the rabbits receiving the sensitized Vaccines 4 and 5. The serums were tested with the same cultures of typhoid bacilli from which Vaccines 1, 2 and 3 were made. The agglutinins were tested according to the usual microscopic methods, with a time limit of thirty minutes.

The bactericidins were tested by making progressive dilutions of serum, mixing them with equal parts of a twenty-four hour culture of bacilli, and incubating at 37 C. (98.6 F.) for fifteen minutes. This was plated, and the number of colonies estimated after twenty-four hours. The opsonic index was made according to Wright's method, and 100 cells were counted.

It was found that none of the rabbits before the injection had agglutinins to typhoid, and that the bactericidins were not present above a dilution of 1:5.

The results of the tests for agglutinins, bactericidins and opsonins are given in the accompanying charts; the numerals refer to the vaccines used and are the same as those used above in describing the preparation of the vaccines.

1. Nonsensitized vaccine killed by the addition of 0.6 per cent. phenol.
2. Nonsensitized vaccine killed at 56 C. standardized in 0.4 per cent. phenol.
3. Nonsensitized washed vaccine.
4. Sensitized vaccine, Gay and Claypole method.
5. Sensitized vaccine, Typho-Serobacterin Mulford, Immunizing.

No negative phase was observed in this series. Taken as a whole, both the agglutinins and the bactericidins in this series were lower than those obtained by the majority of other workers. These individual variations can largely be accounted for by the use of different strains of bacteria and some differences in the methods used. The aim of this study has been toward simplicity. It may be possible that the apparent lack of immunity after the administration of sensitized vaccines is due to the fact that the serums were tested with a culture different from that used in the manufacture of the vaccine, that is, the culture from which Vaccines 1, 2 and 3 were made, and with which the serums were tested.

SUMMARY

There is a slight reaction following the injection of nonsensitized vaccines in rabbits, which is absent following the injection of sensitized vaccines.

Vaccines killed by heat seem to be less active than those killed by the addition of phenol only.

Washing the vaccine does not seem especially to influence its immunizing value.

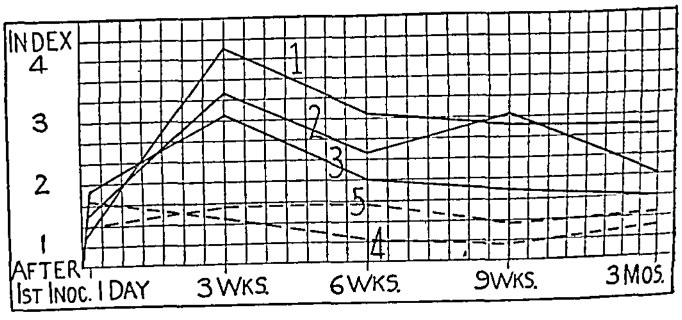

Chart 3.—Opsonins.

The height of the immunity curves occurs earlier after sensitized than nonsensitized vaccines, but the former appear to be only about one fourth as potent.

The agglutinins practically disappear within three months after the first injection, while bactericidins and opsonins can be detected much longer.

Opsonins increase more quickly than do agglutinins and bactericidins.

Opsonins and bactericidins remain more permanent than agglutinins, and immunity is more likely due to the former than to agglutinins.

Sensitized typhoid vaccines are less potent than nonsensitized typhoid vaccines, probably because the bacteria of sensitized vaccines undergo phagocytosis and bacteriolysis more rapidly.

CONCLUSIONS

In conditions in which a prolonged reaction is desired, as in conferring immunity, the nonsensitized vaccines seem preferable.

In conditions in which no general reaction is wanted and a quick response of the protective powers desired, as in active typhoid fever, a sensitized vaccine would seem preferable.

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THE ACETONE BODIES IN DIABETES MELLITUS

INFLUENCE OF LOW AND HIGH PROTEIN INTAKE ON THE EXCRETION OF ACETONE, DIACETIC ACID AND BETA-OXYBUTYRIC ACID

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INTRODUCTION AND REVIEW OF LITERATURE

I have frequently noted that the administration of increased amounts of protein to diabetics often increases the amounts of acetone, diacetic acid and beta-oxybutyric acid excreted in the urine. Magnus-Levy[1] has had a similar experience, and asserts that the increased excretion of the acetone bodies does not mean that they have been formed from the protein but on account of the high protein content of the diet, which makes an extra tax on the oxidizing powers of the body and diverts these from the combustion of the acetone bodies.

It is now firmly settled that the acetone bodies are mostly derived from the fats and especially from the fats composed of the lower fatty-acids.[2] Knoop,[3] Ringer[4] and others have shown that in the catabolism of fatty acids the carbon chains are broken down by the oxidation of the third carbon atom from the end, that is, in the beta position, and the two end carbon atoms are then split off. It follows that two carbon atoms are separated at a time, and therefore every fatty acid which contains an even number of carbon atoms can be converted into beta-oxybutyric acid.

TABLE 1.—RESULTS OF TESTS *

Case Number	Day	Urine				Intake		
		Glucose, gm.	Acetone, gm.	Diacetic Acid, gm.	Beta-Oxybutyric Acid, gm.	Protein, gm.	Fat, gm.	Carbohydrate, gm.
1	1	1.6	0	0	0	135	220	45
1	2	1.8	0.58	0.42	0	135	220	45
1	3	0	1.22	1.06	3.0	175	220	45
1	4	12	1.34	1.28	2.6	175	220	75
1	5	8	0.52	0.31	+	90	220	75
1	6	0	±	±	0	90	220	45
2	1	80	+	+	...	135	220	10
2	2	78	1.62	0.92	1.3	135	220	10
2	3	74	1.48	1.02	0.9	135	220	10
2	4	77	1.72	1.03	0.8	135	220	10
2	5	77	1.65	0 94	1.2	135	220	10
2	6	83	1.24	0.87	1.1	135	220	10
2	7	67	1.11	0.76	0.7	135	220	10
2	8	82	1.38	0.92	0.9	135	220	10
2	9	70	3.20	2.60	2.3	185	220	10
2	10	82	3.09	2.07	1.9	185	220	10
2	11	70	3.17	1.99	2.4	185	220	10
2	12	60	3.45	3.65	2.9	185	220	10
2	13	70	4.18	2.17	3.4	185	220	10
2	14	46	3.27	2.18	2.7	185	220	10
2	15	80	4.20	3.15	2.9	185	220	10
2	16	68	3.18	2.16	2.3	185	220	10
2	17	65	3.40	2.02	2.1	185	220	10
2	18	49	3.18	2.72	1.5	185	220	10
3	1	40	1.49	1.82	1.0	135	220	45
3	2	25	1.17	0.92	0.7	135	220	45
3	3	20	1.15	0.74	0.5	135	220	20
3	4	20	1.02	0.17	0.7	135	220	15
3	5	9	1.04	0.62	0.8	135	220	15
3	6	0	2.17	2.29	1.7	180	220	15
3	7	0	3.26	4.32	2.7	180	220	15
3	8	0	4.22	4.29	3.2	180	220	30
3	9	0	4.18	3.96	3.7	180	220	30
3	10	0	1.08	0.82	0.9	135	220	30
4	1	18	0	0	0	135	220	10
4	2	9.3	0	0	0	135	220	10
4	3	0	0.72	0.54	±	135	220	15
4	4	0	0.91	0.53	±	135	220	15
4	5	0	0.64	0.32	±	135	220	15
4	6	0	0.82	0.95	±	135	220	15
4	7	0	1.43	1.37	0.9	135	220	15
4	8	0	2.94	2.82	1.2	180	220	15
4	9	0	4.42	3.30	1.9	180	220	15
4	10	0	4.70	3.94	3.0	180	220	15
5	1	50	0	0	0	135	220	45
5	2	8.2	0	0	0	135	220	45
5	3	5.4	±	±	±	135	220	45
5	4	4.3	0.72	0.33	±	135	220	15
5	5	0	0.64	0.42	±	135	220	15
5	6	0	0.85	0.36	±	135	220	15
5	7	0	1.74	1.82	0.7	150	220	15
5	8	0	3.34	3.47	2.7	190	220	45
5	9	0	4.32	2.70	3.5	190	220	45
5	10	0	5.68	3.12	4.2	190	220	75
5	11	0	1.74	1.62	0.9	150	220	75
5	12	0	0.72	0.14	±	135	220	75

* A trace is indicated by +, and a faint trace by ±.

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[1] Magnus-Levy: Bull. Johns Hopkins Hosp., 1911, xxii, 46.

[2] Excellent reviews of acidosis are given by Ewing, James: Acidosis and Associated Conditions, Arch. Int. Med., November, 1908, p. 330; Lusk, Graham: Metabolism in Diabetes, ibid., February, 1909, p. 1; Magnus-Levy: Ergebn. d. inn. Med. u. Kinderh., 1908, i, 374; Gigon: Ibid., 1912, ix, 285, and Rosenbloom: New York Med. Jour., 1915, cii, 294.

[3] Knoop, quoted by Porges: Ergebn. d. Physiol., 1910, x, 6.

[4] Ringer: Jour. Biol. Chem., 1913, xiv, 43, 525.

Normal fatty acids which contain an odd number of carbon atoms cannot yield beta-oxybutyric acid.

The acetone bodies might readily be formed from proteins, by separation of the NH_2 group from the amino-acids.[5] It was formerly thought that they could be formed from carbohydrates, as is the closely related lactic acid, but we now know that this is not true.[6] It is to be remembered, therefore, that theoretically the acetone bodies may be formed at the expense of proteins or fats, but that usually they are formed from the fats and in severe diabetes from the fatty acids produced by the deaminization of amino-acids.[7]

TABLE 2.—COMPOSITION OF OX MEAT

	Per Cent.
Glycocoll	2.06
Alanin	3.72
Valin	0.81
Leucin	11.65
Prolin	5.82
Phenylalanin	3.15
Aspartic acid	4.51
Glutamic acid	15.49
Serin	?
Tyrosin	2.20
Arginin	7.47
Histidin	1.76
Lysin	7.59
Ammonia	1.07
Tryptophan	Present

It has been asserted by several observers[8] that sugar produced from protein can inhibit the formation of acetone bodies just as well as carbohydrate can. This statement is based on the fact that with an increase of protein catabolism the acetonuria is lessened, if at the same time the protein given does not drive up the glucosuria and thus do away with the inhibitive action that the protein sugar would exert.[9] In health the catabolism of large quantities of protein can dissipate acidosis on account of its partial conversion into sugar, but in diabetes protein does not act so, as the sugar is not burned up.

Borchardt[10] found that protamin, histon, egg albumin, pancreas and casein, which contain monamino-acids, increasing in the order named, when given to healthy subjects, showing acidosis from carbohydrate starvation, produced different effects on the amount of the acetone bodies excreted. Protamin increased the acidosis, while casein reduced it. Rosenthal[11] found that when meat, casein, egg albumin or thymus were added to a high protein diet they all increased the acetonuria. He thought the higher the glycogen-producing quantity of the protein and its content of monamino-acids, the less is its ability to produce acetone. Lüthje[12] asserted that calf thymus reduced diabetic acidosis, while casein increased it. Labbé,[13] Cammidge,[14] von Noorden,[15] and Hugounenq and Morel[16] have all shown that a high protein feeding to diabetics has a ketogenic influence which in time may be of serious import. Moorhouse, Patterson and Stephanson[17] have recently shown that in experimental diabetes in dogs the course of the acetone excretion bears a close relation to the protein metabolism, and they think that the acetone excretion depends on the character of the proteins fed, as they found that when feeding erepton, the acetone excretion was high. On feeding caseinogen, the amount of acetone excreted fell, and on feeding gelatin the acetone was markedly diminished.

METHODS

The standard strict diets of von Noorden[18] were used in this work. The increased amount of protein added to the diet was always given as meat. The glucose was estimated by Benedict's[19] method, the acetone and diacetic acid by Folin's[20] method, and the beta-oxybutyric acid by Shaffer's[21] method.

EXPERIMENTAL

Table 1 presents the results obtained in this study. All of the five cases studied show a marked increase in the amounts of the acetone bodies excreted in the urine when the protein intake was increased; and when the protein intake was lowered, the amount of the acetone bodies excreted was lessened.

TABLE 3.—COMPOSITION OF GELATIN

	Per Cent.
Glycocoll	16.5
Alanin	0.8
Valin	1.0
Leucin	2.1
Isoleucin	..
Phenylalanin	0.4
Tyrosin	0
Serin	0.4
Cystin	..
Prolin	7.7
Oxyprolin	3.0
Aspartic acid	0.6
Glutamic acid	0.9
Tryptophan	0
Arginin	7.6
Lysin	2.8
Histidin	0.4
Ammonia	0.4

These results may also explain partially the remarkable effects of the so-called green days and oatmeal days in lessening the amount of acetone bodies excreted in the urine. As both of these diets contain very little protein (typical green days 30 gm., and typical oatmeal days 51 gm.), it may be that part of the lessened excretion of acetone bodies is due to the lowering of the protein intake.

It is most likely that the increased excretion of the acetone bodies produced by increasing the protein intake is due to the fact that some of the amino-acids present in the protein act as ketogenic substances. In Table 2 is given the most complete analysis of ox meat.[22]

It is well known that of these constituents the *leucin*, *tyrosin* and *phenylalanin* are ketogenic, and it may be that the increased excretion of the acetone bodies is due to the presence of these amino-acids in the increased amount of meat protein ingested.

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5. Fittipaldi: Zentralbl. f. d. ges. Physiol. u. Path. d. Stoffwechs., 1901, v, 161. Emden and Engel: Beitr. z. chem. Phys. u. Path., 1907, xi, 323.
6. Satta: Beitr. z. chem. Phys. u. Path., 1905, vi, 1, 388. Waldvogel: Die azetone Körper, 1903. Schwarz: Deutsch. Arch. f. klin. Med., 1903, lxxvi, 233.
7. Blumenthal and Neuberg: Beitr. z. chem. Phys. u. Path., 1902, ii, 238. Orgler: Beitr. z. chem. Phys. u. Path., 1900, i, 583. Embden, Salomon and Schmidt: Beitr. z. chem. Phys. u. Path., 1906, viii, 129.
8. Talma: Therap. d. Gegenw., 1901, p. 385. Hirschfeld: Ztschr. f. klin. Med., 1895, xxviii, 176. Waldvogel: Ibid., 1899, xxxviii, 506. Rosenfeld: Centralbl. f. inn. Med., 1895, No. 51.
9. Von Noorden: Metabolism and Practical Medicine, 1907, iii, 590.
10. Borchardt: Arch. f. exper. Path. u. Pharmakol., 1905, liii, 388.
11. Rosenthal: Centralbl. f. inn. Med., 1908, 185.
12. Lüthje: Ztschr. f. klin. Med., 1900, xxxix, 397.
13. Labbé: Semaine méd., 1911, p. 506.
14. Cammidge: Lancet, London, 1913, ii, 1319.
15. Von Noorden: Med. Klin., 1913, ix, 612.
16. Hugounenq and Morel: Semaine méd., 1911, p. 505.
17. Moorhouse, Patterson and Stephanson: Biochem. Jour., 1915, ix, 171.
18. Von Noorden: Die Zuckerkrankheit und ihre Behandlung, Berlin, 1912.
19. Benedict: Jour. Biol. Chem., 1911, ix, 57.
20. Folin: Jour. Biol. Chem., 1907, iii, 177.
21. Shaffer: Jour. Biol. Chem., 1908, v, 211. Shaffer and Marriott: Ibid., 1913, xvi, 265. Pribram: Ztschr. f. exper. Path. u. Therap., 1912, x, 279, 284. Cook and Gorslin: Jour. Biol. Chem., 1911, x, 291.
22. Osborne and Jones: Am. Jour. Physiol., 1909, xxiv, 438.

Another reason to suspect that this is the case may be found in the results obtained by Moorhouse, Patterson and Stephanson. They found that, of the various proteins studied in regard to their effect on the excretion of acetone in dogs rendered diabetic, gelatin produced a marked diminution in the excretion of these bodies. I think the explanation of this result is due to the fact that gelatin contains very small amounts of *leucin, tyrosin* and *phenylalanin,* as may be seen from the analysis[23] given in Table 3.

The importance of restricting the amount of protein in the diet in diabetes has long been well known in regard to the sugar excretion.[24] I present in this paper data showing the importance of restricting the protein intake in diabetes in relation to lessening the amount of excretion of the acetone bodies in the urine. It is possible that by selecting proteins free from those amino-acids that are ketogenic we may be better able to control the formation of the acetone bodies in this disease.

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THE PREVENTION AND TREATMENT OF RINGWORM AND FAVUS OF THE SCALP

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In a recent case report of "Two Favus Families,"[1] I illustrated some of the results of neglecting to attend properly to every case of favus of the scalp as soon as it is discovered.

Ringworm and favus of the scalp are not common diseases in many of our smaller cities and towns. The importance, therefore, of properly caring for the early cases, in order to prevent their spread, is often insufficiently appreciated by the health authorities and physicians of such localities.

In addition to this, the profusion of drugs recommended for these diseases, as well as the lack of detailed information of the method of carrying out the treatment and of what is expected from it, leave the physician, who is unfamiliar with these diseases, uncertain what to do.

As ringworm and favus are closely related, and as their treatment is similar, they may well be considered together. Both are children's diseases and preeminently diseases of the school age. Ringworm of the scalp heals spontaneously at the approach of puberty, and is almost never found in an adult. Favus almost always begins in childhood, but unlike ringworm, does not usually heal spontaneously until it has destroyed all the hair of the scalp, which frequently is not until late in life.

These diseases do not affect the general health, and their importance consists chiefly in the loss of education to the individuals affected, as the children are usually excluded from school. In the case of favus this exclusion generally includes the whole school life of the child, if he is not properly treated.

The objects to be sought in the management of these diseases are the prevention of their spreading to others and the cure of the affected individuals.

In order to prevent their spread:

1. All cases should be reported to the health authorities, who should have the power of supervising them. Diseases which are excluded from this country by the federal government are not too unimportant to be noticed when they are found here.

2. Whenever a case is discovered in a school, all the children in the room should be examined. This is more necessary in the case of ringworm than in that of favus, as it is much more contagious than the latter, which is usually contracted only by members of the immediate family.

3. Whenever a case is found, it should be ascertained whether there are other children in the family or house, and if there are, all these children should be examined, for it is the exception for only one child of a family to be affected in the case of ringworm, and in the case of favus more than one are frequently affected. This is easily understood, as both diseases are especially found in unhygienic and crowded quarters.

4. Houses in which cases have been found should be thoroughly disinfected after the disease is cured or when they are vacated.

Other precautions for the prevention of the spread of the diseases naturally come under the head of treatment and will be considered there.

The modern and only satisfactory rapid method of curing these diseases is by the use of the Roentgen ray, but as it can be employed only by a skilled roentgenologist who has had an opportunity of previously seeing its application, and as it is not practicable in localities in which there are only a few cases to be treated, it will be simply mentioned in this place.

Strickler[2] of Philadelphia recently reported good results in ringworm with a vaccine treatment, which will be of great value if further use confirms his results.

Before considering the treatment in detail, it will be well to consider some of the difficulties to be contended with. In the first place the fungi are extremely tenacious of life when removed from the scalp. Ringworm can ordinarily be produced from crusts which have been preserved for from three to six months, and instances of successful inoculation have been known to take place after eighteen months, though the spores are always dead after two years. The life of the fungus in the hair is longer, and spores in removed hairs will usually grow after fifteen or eighteen months. Favus spores have been found living in scutula after two years.

In locations in which they can be reached by antiseptics, the fungi are easily destroyed, but in both diseases a large number of the fungi are buried deeply in the hair follicles and in the interior of the hairs. When we consider the fact that in the case of ringworm "soaking the hair in absolute alcohol for as long as twelve hours will not inhibit the growth of the fungus," we are not surprised that "the resistance of the parasite in the hair follicle has up to the present time remained almost absolute to all chemical agents." This statement may be extended to include the Roentgen ray, which does not kill the parasites.

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[23] Fischer, Levene and Aders: Ztschr. f. physiol. Chem., 1902, xxxv, 70. Kossel and Kutscher: Ibid., 1901, xxxi, 165. Fischer and Boehner: Ibid., 1910, lxv, 118.

[24] Kossel: Deutsch. med. Wchnschr., 1898, p. 58. Müller and Seeman: Ibid., 1899, p. 209. Stiles and Lusk: Am. Jour. Physiol., 1903, ix, 380.

[1] Lane, J. E.: Two Favus Families, The Journal A. M. A., Oct. 16, 1915, p. 1362.

[2] Strickler, Albert: The Vaccine Treatment of Ringworm of the Scalp, The Journal A. M. A., July 17, 1915, p. 224.

From these facts is easily seen the futility of all treatment by antiseptics alone, in whatever form they may be used. They are necessary but, without the removal of the deep-seated fungi, they are unable to effect a cure of either disease. In this connection it may be well to quote Sabouraud,[3] to whom all who say anything about these diseases must acknowledge their indebtedness. He says that "the frequent observations of favus cured without depilation by various applications must assuredly be ranked as fables," and that "when an author claims to have cured a tinea tonsurans in three weeks, he evidently does not know what he is talking about, and the only reply that can be made is, that it takes at least six weeks to affirm that it is cured."

TREATMENT

1. The hair should be cut short over the whole head, but it should not be shaved, as this would prevent effectual depilation. This is essential in all cases of favus and in all cases of ringworm, except those of very limited extent. In these the hair must be cut well around the edges of the affected area. The purpose of this is cleanliness, prevention of the spread of the disease, easier discovery of new patches, and facilitation of the treatment.

2. When crusts are present they must be removed. This is best accomplished by soaking the head with oil for a day or two to soften them. Cottonseed oil, to which 1 per cent. of betanaphthol has been added, serves the purpose admirably. The head is then washed with an antiseptic soap for which the following formula may be used:

℞	Betanaphtholis	3 parts
	Sulphuris praecipitati	10 parts
	Saponis mollis	q. s. ad 100 parts

3. Depilation is the most important as well as the most difficult and tedious part of the treatment, except when the Roentgen ray is used. The most satisfactory method of depilation is still that of the thumb forceps, although many easier and quicker methods have been tried. In extensive cases of favus, the whole head must be depilated and redepilated as fast as any hair grows, for at least three months. In early cases with small areas involved the depilation may be limited to the affected areas and a circumference of half an inch. In the case of ringworm, depilation of the patches cannot be completely accomplished, as many of the hairs are broken off and the rest are so fragile that they break when this is attempted. But all patches should be kept as completely depilated as possible, together with the surrounding area, as in the case of favus.

4. The value of antiseptic applications lies in the destruction of the superficial fungi and in preventing the spread to other spots and to other individuals. They also serve the additional purpose, in the case of ringworm, of irritating and causing some inflammation in the affected areas, which facilitates the expulsion of the stumps of the broken hairs that cannot be pulled out. The affected areas are painted daily with:

℞	Tincturae iodi	20 parts
	Alcoholis	80 parts

and the following ointment applied to the whole head:

℞	Hydrargyri praecipitati flavi	1 part
	Sulphuris praecipitati	1 part
	Resorcinol	1 part
	Olei cadini	10 parts
	Adipis lanae	10 parts
	Petrolati	10 parts

5. The head should be washed daily or every other day with the antiseptic soap for which the formula has been given. If crusts persist in forming they are softened and removed as often as necessary.

6. The following additional precautions should be taken: It is hardly necessary to say that individual toilet articles should be used. Keeping the hair cut short removes any necessity for the use of comb and brush. Affected children should sleep alone. Other children should not be allowed to wear the hats of the patients. The heads should be isolated as well as possible, and for this purpose there is nothing better than a tight-fitting cotton cap which can be boiled or thrown away when soiled. The scalps of persons affected with these diseases bear irritation remarkably well, and there is usually no occasion for interrupting the treatment. However, if the heads become sore from it, it is stopped for a few days, and petrolatum applied till it is resumed.

If these steps are carried out faithfully for a long enough period of time, the diseases will be cured and their spread pretty well limited. In extensive cases, the time necessary for cure is not likely to be less than two years, except in some of the rarer varieties of ringworm. When a case after vigorous treatment is apparently cured, treatment should be suspended for a month or six weeks. If there are no signs of recurrence at the end of that time, the patient should be examined occasionally for another six weeks before he is pronounced cured. If, in the meantime, any unhealed spots become visible, treatment should be at once resumed.

This is not an easy way to cure these diseases, but the more thoroughly it is realized that, with the exception of the Roentgen ray, there is no easy way of curing them, the better shall we take the precautions necessary for preventing their becoming so numerous as to present a serious problem.

The applications mentioned are no better and no more efficient than many others. They may be varied ad libitum with perfect confidence that many others are just as efficient in keeping the surface clean, and just as inefficient for affecting the disease in the hair follicles.

The difficulties encountered in the treatment of ringworm have been well stated by Martin[4] as follows:

1. The multiplicity of treatments proposed.
2. The confusion in the diagnosis of the different varieties.
3. The certainty of an ultimate spontaneous cure.
4. The depth of the anatomic seat of the lesion.
5. The difficulty of diagnosis, especially of an early diagnosis.
6. The difficulty of diagnosis of cure.
7. The difficulties of prophylaxis.

All of these difficulties are considerable in the case of ringworm, and for the most part equally so in the case of favus.

I have avoided adding to the confusion by mentioning any new drugs or combination of drugs that are still constantly being suggested with claims for the remarkable results referred to by Sabouraud as "fables." A few of the statements made here are not strictly applicable to some of the rarer varieties of ringworm, but it seemed best not to complicate the subject by calling attention to exceptional cases.

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[3] Sabouraud: Les teignes, Paris, 1910.

[4] Martin, quoted by Sabouraud: Les teignes, p. 758.

NEPHRITIS

A NEW SERIES OF CASES WITH A REVIEW OF RECENT LITERATURE *

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RESULT OF AUTHOR'S INVESTIGATION

The material for this investigation has been collected since the reading of my first paper. On the whole the method of investigation and the class of cases covered has been the same, but in this instance the anatomic research has been supplemented by a careful study of the clinical histories.

The material comprises eight cases of amyloid disease associated with chronic parenchymatous nephritis, thirty-four cases of general arteriosclerosis with cardiac hypertrophy, in which the kidneys were slightly involved in twelve and moderately diseased in twenty-two cases. In addition there were eight cases of general arteriosclerosis with more extensive renal lesions of the type described in my first paper as arteriosclerotic nephritis. The most interesting group was that of thirty-two cases of glomerulonephritis of which four were acute, eight subacute, seventeen chronic; in addition, belonging to the last group, there were three cases in children which it was difficult to classify on account of the peculiar mixture of subacute and chronic lesions in them.

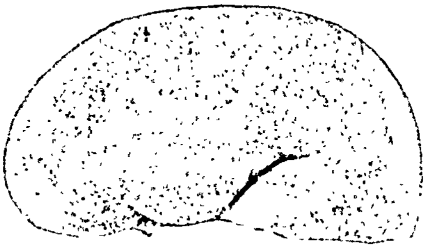

Fig. 1.—Case XVII, 188, acute glomerulonephritis; one-half normal size.

SUBACUTE AND CHRONIC PARENCHYMATOUS NEPHRITIS

These cases certainly, of themselves, form a separate group, both anatomically and clinically. They represent the "nephroses" of Volhard and Fahr.[4] Their most characteristic feature, histologically, is the extensive epithelial degeneration with granular change and development of double refractile lipoid droplets. The diseased tubules are usually full of casts. Amyloid was found again in all my cases, although in some the amount of amyloid in the glomeruli was not very large. In all cases amyloid was also found in the spleen or liver or both. The etiologic factors in all of them were the usual causes of amyloid disease (chronic tuberculosis in three, chronic syphilis in one, malignant tumor in one, chronic suppuration in three).

From the very beginning, as emphasized in my previous paper, these cases show inflammatory lesions in and about the glomeruli. In the early stages there may even be a very heavy infiltration of the glomeruli and of the interstitial tissue with polymorphonuclear leukocytes. Connective tissue proliferation sets in early and eventually may lead to considerable shrinkage of the kidneys, which at first are very large and white. On account of these inflammatory changes, the occurrence of which in the later stages is acknowledged by Volhard and Fahr, I believe that their appellation "nephrosis" is faulty and I still prefer the term acute, subacute or chronic parenchymatous nephritis with, or possibly without, amyloid.[5]

Clinically these cases are characterized by very pronounced urinary findings (much albumin, many casts), marked edema (although very emaciated cases may remain "dry"), absence of hypertension and a small heart.

GLOMERULONEPHRITIS

1. Acute glomerulonephritis: Figure 1 shows a characteristic gross specimen of this condition and Figure 2 is a photomicrograph taken in a typical case. The kidneys in these cases are usually considerably swollen, hyperemic, edematous, somewhat opaque.

Petechial hemorrhages are frequently found in the cortex, but they vary considerably in number. The best descriptive term to apply to these kidneys is large variegated kidney, because their discoloration contrasts strongly with the extreme pallor of the amyloid kidneys (large white kidney).

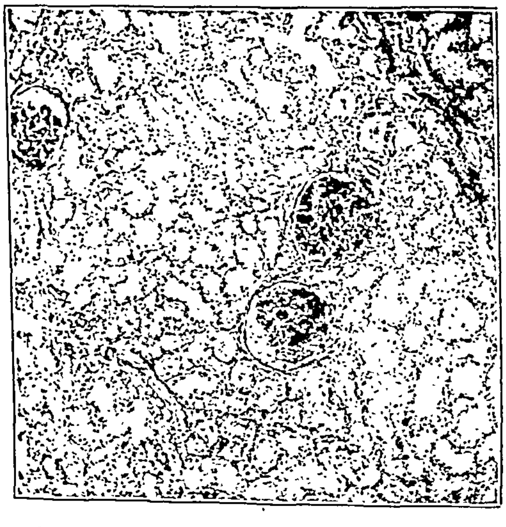

Fig. 2.—Case XVIII, 158, acute glomerulonephritis; magnified 57 times.

The histologic features of the process are acute inflammatory lesions in and about the glomeruli, inflammatory hyperemia, and edema of the interstitial tissue, blood, leukocytes and casts in the tubules. The epithelium is more or less degenerated. The presence of numerous neutrophilic and of some eosinophilic leukocytes in the affected glomeruli and in the tissues plainly show the inflammatory character of the condition.

The urinary findings are very pronounced; there may be edema. Blood vessels and heart are still normal except for accidental lesions.

The condition is caused by septic infection, usually with streptococci, and the death of the patient is due to the overwhelming infection, the nephritis playing a minor part in the clinical symptom-complex.

Even at this early stage a certain degree of anemia may have developed on account of the underlying septic infection.

In three of our cases the acute *diffuse* glomerulonephritis was the result of a final exacerbation of a chronic diplostreptococcus endocarditis.

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* From the Pathological Laboratory of the Leland Stanford Junior University, School of Medicine.

* Read before the Section on Pathology and Physiology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

* Because of lack of space the review of the literature has been omitted in The Journal. The complete article appears in the Transactions of the Section and in the author's reprints. A copy of the latter will be sent by the author on request.

[4] Volhard and Fahr: Die Brightsche Nieren-Krankheiten, Berlin, 1914.

[5] In this consideration I have eliminated the purely toxic forms of nephritis like the corrosive sublimate kidney, etc., on account of lack of suitable material.

2. Subacute glomerulonephritis: In these cases the kidneys are also large, more or less opaque and variegated. Some of them are studded with minute hemorrhages (Fig. 3) others are more pale as in Figure 1. Histologically the glomeruli show hyaline necroses of some of their loops, intracapillary and extracapillary proliferation (Fig. 4). The tubules are in the same condition as in the acute cases. The infiltration of the interstitial tissue with neutrophilic and eosinophilic leukocytes is often very severe and there are evidences of a beginning diffuse proliferation of the connective tissue. The blood vessels locally and generally are still normal except in the late cases, when a local involvement of the blood vessels may be noticed. The blood pressure rises gradually to 180 to 200 and there may be seen at necropsy a commencing hypertrophy of the left ventricle.

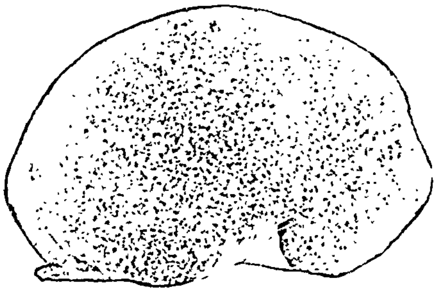

Fig. 3.—Case XVIII, 166, subacute glomerulonephritis; one-half normal size.

The urinary findings are very marked and in one of our late cases there was evidence of a beginning polyuria. The anemia is also more noticeable.

The etiology in all cases is very evident in a comparatively recent history of tonsillitis, rheumatism and other forms of streptococcus infection with or without endocarditis. The latter was present in four of our eight cases. One of our cases, a very pronounced diffuse subacute glomerulonephritis in a baby of 2 months, was remarkable on account of the absence of streptococcus infection. In this case the lesion must be attributed either to a severe colon bacillus pyelitis or possibly to congenital syphilis, of which there was definite clinical and anatomic evidence.

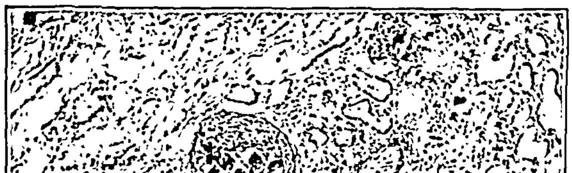

Fig. 4.—Case XIV, 34, subacute glomerulonephritis; magnified 57 times.

Edema is often marked, but is not always present. One late patient in whom the condition had been running for about six years had an albuminuric retinitis and died in uremic coma. Most of the patients, however, died within one year of the infection, but there were three late patients who lived thirteen months, four years and six years, respectively. In several of these late subacute cases the symptoms of the original infection had more or less subsided and the symptom-complex was dominated by the nephritis.[6]

In both acute and subacute cases diplostreptococci can often be found in the urine.

3. Chronic glomerulonephritis: In chronic glomerulonephritis the kidneys show marked evidence of contraction which is either diffuse, and then the surface of the organ remains smooth (Fig. 5), or irregular, producing a granular (Fig. 6), or sometimes even coarse, nodular, surface. The capsule is thickened and adherent. The color varies from dark red with numerous hemorrhages to a pale putty color. Quite often one notices a distinct brownish tinge on account of hematogenous pigmentation of the epithelium and other tissues. Some of the kidneys are more or less cystic. The cortex is narrow and the markings on the cut surface are indistinct.

The microscope (Fig. 7) shows a marked diffuse proliferation and fibrous transformation of the connective tissue with atrophy of many tubules. Other tubules may remain large or even become hypertrophic. Many of them still contain leukocytes and red blood corpuscles. There may be much epithelial degeneration and many casts. The glomeruli become more and more fibrous and eventually are transformed into small solid nodules of hyaline connective tissue. Even at this stage, however, one usually encounters at first many, later few, glomeruli with subacute lesions; which finding materially assists in the histologic diagnosis.

The blood vessels in the kidney show most remarkable differences. In some very old and far-advanced cases they remain practically normal, in others they show intense lesions very early. These vascular lesions develop into extreme degrees of endarteritis both in the small and in the larger arteries. The disease of the blood vessels remains localized in the kidneys and the renal arteries in the majority of cases (ten in our series of fifteen with marked vascular lesions) but there are some in which a very pronounced degree of general arteriosclerosis develops eventually.

The blood pressure is always elevated and runs up to 200, more rarely to 250. The heart is usually enlarged, but within moderate limits. The wall of the left ventricle, however, may show a very evident concentric hypertrophy. There were three cases with normal or even small hearts.

The urine continues to show considerable albumin, more or less constantly. Casts may be present at all times or in showers. Red blood corpuscles and leukocytes are found frequently. Practically all our cases showed a marked polyuria and some definite hyposthenuria. The phenolphthalein excretion when measured was always found considerably diminished and sometimes almost entirely suppressed.

Edema is a very common symptom, but there are "dry" cases. Uremia is often observed (eleven cases out of seventeen); retinitis albuminurica more rarely (three out of seventeen).

Anemia, with very few exceptions, is well developed; it being very common to see a reduction of red blood corpuscles and hemoglobin to one half or less. The character of the anemia is that of a severe secondary anemia.

It is natural, that in these old cases it is much more difficult to detect the original infection which caused the nephritis, unless it persists palpably in the form of an old endocarditis or, as in one of our cases, in the shape of an old septic infarct of the spleen, full of influenza bacilli. A careful study of the clinical record, however, usually reveals a very definite history of repeated attacks of tonsillitis, rheumatism or other septic troubles, and it is suggestive that the better the record the more commonly is there note of such conditions. In some cases it may be possible to discover the old septic focus at necropsy, although this may not always be an easy matter. In some cases the urinary tract itself may afford a hiding place for the streptococci, they being found more or less constantly in the urine, and at necropsy in smears from the slightly inflamed renal pelvis or urinary bladder. The more intensive study of this series of cases has greatly strengthened my previous conviction that all these cases are due to septic and mostly streptococcic infections in the last resort, and also the idea that it is the continuance of this infection in more or less hidden foci which keeps the process in the kidneys going.

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[6] Volhard and Fahr distinguish between a more severe form of subacute glomerulonephritis with much extracapillary proliferation in the glomeruli and a milder form with intracapillary lesions only. I believe this is an unnecessary refinement, but there is no question that the cases with much extracapillary proliferation are the severer ones.

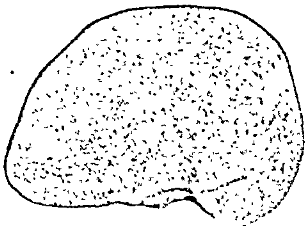
Fig. 5.—Case XVI, 10, chronic glomerulonephritis; diffuse contraction with smooth surface; one-half normal size.

4. Subacute and chronic glomerulonephritis in children: This small separate group of three cases of glomerulonephritis in children is especially interesting for several reasons. The etiology was very evident in all three cases, in one a general diplostreptococcus sepsis with an infectious aneurysm of the abdominal aorta without history of tonsillitis, in another repeated attacks of tonsillitis and in the third, a boy of 6 years, nephrolithiasis with development of a large calculus in the bladder and streptococcus infection of the urinary tract.

The rise of blood pressure in these three cases was well marked (about 150) and the cardiac hypertrophy very definite, in fact, more pronounced than in adults, as one would expect in the youthful organism. This in the absence of all signs of general arteriosclerosis and in one case of all local vascular change in the kidneys definitely proves that the hypertension in nephritis is not the result of arteriosclerosis. In two cases there was very marked local arteriosclerosis in the diseased kidneys without any further involvement of the arteries elsewhere, proving also that the arteriosclerosis in the kidneys in these cases is purely the result of local conditions.

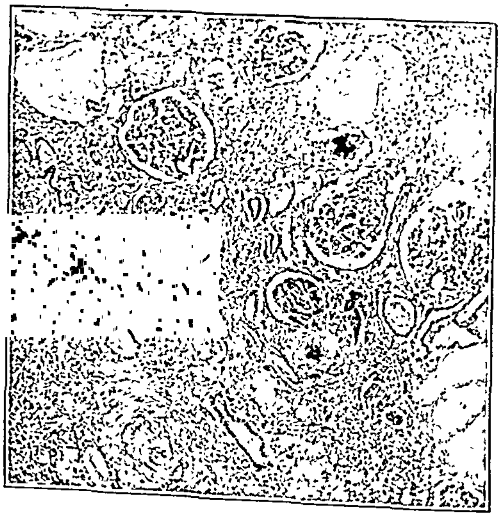
Fig. 7.—Case XVIII, 19, chronic glomerulonephritis; magnified 57 times.

5. Focal hemorrhagic glomerulonephritis (Löhlein): In subacute or chronic bacterial endocarditis, Löhlein[7] has described glomerular lesions which he believes to be essentially different from those in true glomerulonephritis. Baehr,[8] who studied the kidneys in twenty-five cases of bacterial endocarditis, found this condition in twenty-three of them and gave a very complete description of the process. The characteristic feature appears to be a hyaline necrosis of a circumscribed portion of a certain number of glomeruli, associated with hemorrhage. The hyaline material is later organized and replaced by fibrous tissue. Löhlein suggested that the condition might be of embolic origin, due to the detachment of very small pieces of septic thrombus from the heart valves, but he was unable to find any bacteria in the hyaline material which fills the capillaries of the glomeruli in these cases. Since then Baehr has actually demonstrated the diplostreptococci in the affected loops in five of his more acute cases, in specimens that were fixed in alcohol. The bacteria, however, seem to disappear very rapidly in the lesions; as Baehr says: "In the later stages of the lesions, bacteria were never found; apparently they underwent destruction during the early stages when the glomerular structure was disintegrating." Inflammatory lesions in and about the affected glomeruli are usually absent or much less intense than in ordinary glomerulonephritis, but when the condition involves the major part of a glomerulus and is associated with a more intense reaction, as sometimes happens, it is difficult to distinguish it from true glomerulonephritis. The focal character of the disease also varies a good deal in different cases, sometimes a few glomeruli being affected, at other times a great many. If a great many glomeruli are involved rather severely, it becomes difficult to distinguish this form from diffuse glomerulonephritis both histologically and clinically, and I believe, in the descriptions laid down in literature, one can find all intermediate stages between focal and true diffuse glomerulonephritis. The differences are purely quantitative in character and I cannot help but feel that this focal hemorrhagic glomerulonephritis is merely an abortive form of true glomerulonephritis.[9] The knowledge of the frequent occurrence of this type of disease in subacute and chronic endocarditis is of considerable practical importance, as it will prevent the clinicians from diagnosing a serious *diffuse* glomerulonephritis merely on the basis of possibly transitory urinary findings.

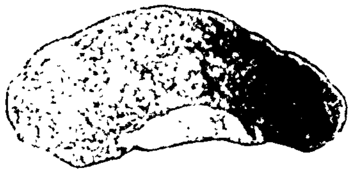
Fig. 6.—Case XVII, 68, chronic glomerulonephritis; granular contracted kidney; one-half normal size.

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[7] Löhlein: Pathologische Anatomie der haematogenen Nephritis, Ergebn. d. allg. Path. u. path. Anat. (Lubarsch und Ostertag), 1910, xiv, No. 2, p. 874.

[8] Baehr: Glomerular Lesions in Subacute Bacterial Endocarditis, Jour. Exper. Med., 1912, xv, 330.

[9] Löhlein's statement that in true diffuse glomerulonephritis *all* glomeruli must show evidence of disease, is certainly an exaggeration. The lesions usually affect a majority of the glomeruli, but all subacute and chronic cases show clear evidence of a more gradual involvement of glomeruli, apparently in repeated crops.

Cases of this kind have been found not only in diplostreptococcus endocarditis but also in ordinary streptococcus infections and even in colon bacillus sepsis.

It is interesting to note that in the three acute cases of diffuse glomerulonephritis of our series which were the result of chronic diplostreptococcus endocarditis, old focal lesions of the character just described were found in all. Evidently in these cases, for a considerable time, the kidneys were involved to a minor degree only, until a sudden recrudescence lighted up the process and caused more acute *diffuse* lesions and incidentally the death of the individual.

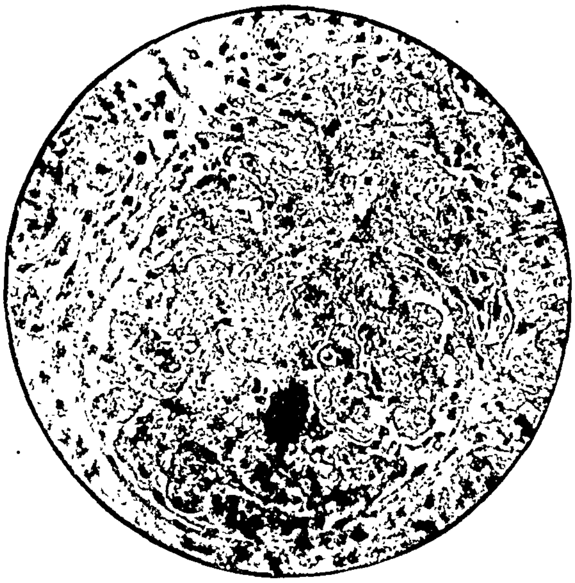

Fig. 8.—Case XVI, 212, hyaline deposit and degeneration extending beyond glomerulus along vas afferens; magnified 210 times.

6. Histogenesis of glomerulonephritis: There remain to be discussed a few problems connected with the histogenesis of glomerulonephritis. There are especially two important questions which arise naturally: first, How are the so important lesions produced in the glomeruli? Second, Is there any explanation for the later involvement of the blood vessels?

As stated before, Löhlein had postulated an embolic origin for the lesions observed in focal glomerulonephritis, and his deductions seem to have been confirmed by the actual finding of bacteria in the early stages of the condition both by Baehr[8] and by Fahr.[9] I do not see any reason why this idea could not be extended to all cases of glomerulonephritis or at least to the majority of them. In practically all my cases during the more acute stages, some and often many loops of the affected glomeruli are more or less completely filled with peculiar hyaline masses[10] which have been described by many previous investigators, and the wall of these capillaries undergoes a peculiar form of hyaline necrosis with karyorrhexis of the nuclei of the endothelium and other cells. The origin and meaning of this peculiar form of thrombosis has been the source of much discussion. From a study of the early cases I have become convinced that this thrombosis and subsequent hyaline necrosis of the capillary wall precedes all other changes in the glomeruli, which is in full agreement with the opinion of previous investigators. The only difficulty in the way of assuming an infectious, embolic origin for these lesions is the fact, which I can confirm from my own experience, that in spite of the most careful search one cannot find any bacteria in these masses. The detection of isolated bacteria is, however, made somewhat difficult by the numerous small fragments of chromatin scattered through the hyaline material. Still, in the embolic focal glomerulonephritis we encounter the same difficulty and the assumption is made, and I believe justly, that in the majority of instances it is the rapid destruction of the bacteria which accounts for their absence.

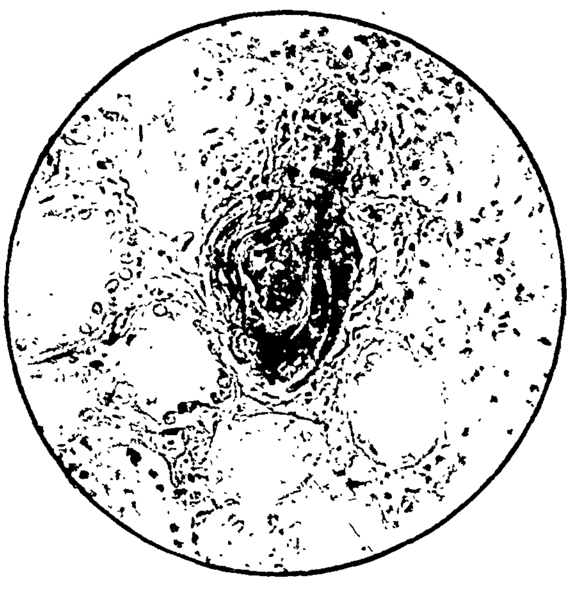

Fig. 9.—Case XVIII, 70, hyaline thrombosis of a small artery with complete obstruction; magnified 210 times.

When one considers in addition that in these cases of chronic septicemia, especially when they are associated with endocarditis, small clusters of bacteria necessarily must be in the circulation all the time, the mere fact that they cannot be found in the glomeruli is, to my mind, a strong argument for the belief that they must be destroyed in them because similar material in other cases is so apt to be found lodged in these structures. This line of reasoning suggests itself especially in those cases in which bacteria can be demonstrated easily in other capillaries of the same kidney but not in the glomeruli. Among my series there are several such cases in which many of the ordinary capillaries are full of diplostreptococci, but in which the diseased glomeruli are free from them.

In view of the actual finding of the bacteria in focal glomerulonephritis in which the reaction is less intense, I believe that we are justified in developing the following hypothesis: In cases of chronic septicemia the endothelium of the glomeruli gradually acquires strong bacteriolytic properties. When in such cases suddenly large numbers of the bacteria are thrown into the glomeruli, an explosive bacteriolysis takes place which liberates large amounts of bacterial toxins. These cause blood destruction resulting in hyaline thrombosis, hyaline necrosis of the wall of the capillaries and the inflammatory reaction about them.[11]

This theory, if true, would solve many difficulties which we otherwise encounter in an attempted explanation of the renal lesions. If we believe that the affection of the kidneys is purely toxic, it is difficult to understand how the poisons could ever become so concentrated in the blood that they would produce these intensely inflammatory conditions in the kidney, and in no other organs, but even more difficult to explain in case of a general intoxication would be the fact that all glomeruli are not affected similarly and simultaneously.

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[10] I wish to state here positively that these masses have nothing whatever to do with amyloid, as I was misled to assume in my previous paper.

[11] An experimental confirmation of this idea is at present being attempted in our laboratory.

The relation of the disease of the small arteries to the rest of the renal lesions has also been the subject of much contention. It is evident from our specimens that the endarteritis cannot be the direct result of the inflammatory changes in the tissues about them, because, in some cases, the arterial lesions are early and extensive, in others the inflammatory changes in the connective tissue may be far advanced and the arteries remain practically normal. The great question here, as in other forms of arteriosclerosis, has always been whether the condition was due to toxic or to mechanical causes.

The careful study of some of my cases suggests what I believe to be a new and better solution of this question, so far as the arterioles are concerned. It brings the lesions in them into close connection with those in the glomeruli. The occurrence of peculiar hyaline masses in the wall of the diseased arterioles in chronic nephritis has been emphasized by several previous investigators. These hyaline masses were especially well marked in one of my cases (XVI, 212) of early chronic glomerulonephritis, and in this instance the relation of the arterial lesion to that in the glomeruli was especially evident. Many of the glomeruli were the seat of a very extensive hyaline necrosis which involved the vasa afferentia at their point of junction with the tuft, but differently from what one sees in the loops of the tufts—the hyaline material in the small arteries did not occlude the lumen entirely, but left a small open space in the center as shown in Figure 8, and could be followed back in the wall of the artery for quite a distance.

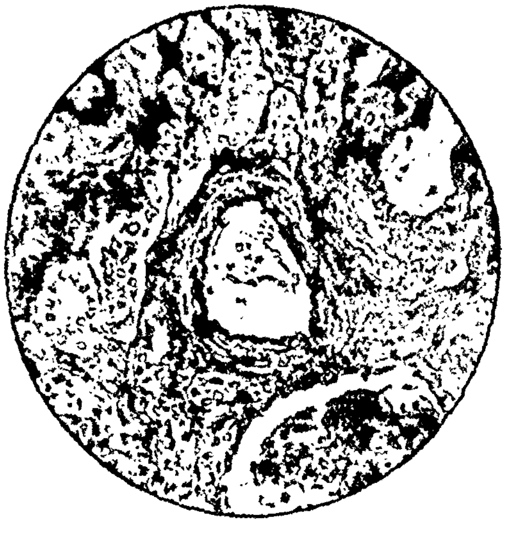

Fig. 10.—Case XVIII, 61, thrombotic masses containing leukocytes and red blood corpuscles underneath endothelium in small artery; magnified 210 times.

Sometimes the lumen of the arterioles is entirely closed by this process, as shown in Figure 9; most commonly, however, a small central lumen remains open. This lumen is either merely spared out of the heavy masses of hyaline fibrin deposited on the wall, or in many cases a more or less perfect layer of endothelial cells can be demonstrated on the inner surface of the fibrin. In some way the coagulable material must get in behind the endothelium. That this material is really derived from the contents of the blood vessels is shown by the fact that blood corpuscles, white and red, are carried behind the endothelium, as shown in Figure 10, in which several groups of red blood corpuscles are seen between the endothelium and the inner elastic layer. The same idea is borne out by the fact that the material which transudes into the tubules from the glomeruli partly coagulates in the form of ordinary fibrin, partly in the form of similar hyaline masses as shown in Figure 11.

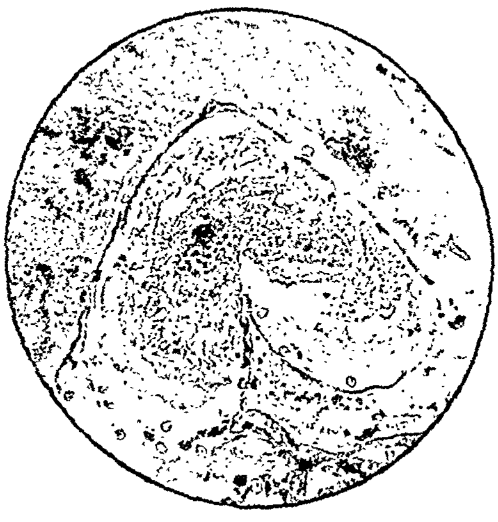

Fig. 11.—Case XVIII, 70, fibrin both thready and hyaline in tubule; magnified 210 times.

This hyaline material in the arteries is gradually organized (Fig. 12) and eventually it is entirely replaced by fibrous tissue in which gradually elastic fibers develop as is clearly shown in Figure 13. The process, then, in the arterioles in this and in several other cases of my series, is evidently the result of the organization of a hyaline material furnished by a peculiar form of lateral thrombosis, and I imagine that such must be the case in other instances.

So far I have not been able to collect any data in explanation of the gradual extension of the disease from the arterioles to the larger arteries. That similar thrombotic processes in small and even large arteries are not uncommon in cases of chronic glomerulonephritis is evident in several of my cases.

In some of them, scattered small anemic necroses in the kidneys are shown; in others, anemic necroses and later scars in the heart muscle. These lesions in the heart muscle may give rise to clinical symptoms of myocarditis.

In one case (XVIII, 61) in addition to these myocardial changes there was clinical evidence of similar disturbances in the arteries of the brain (hemiplegia) and in the arteries of one leg (dry gangrene of the foot). Unfortunately we were not permitted to determine the exact condition at the necropsy.

PRIMARY ARTERIOSCLEROTIC CONTRACTED KIDNEY

I may be very brief on this point, as my subsequent experience entirely confirms the result of my previous observations. In these cases the general arteriosclerosis is the principal feature. The renal disease is more or less incidental and varies in intensity, anatomically, almost independently of the clinical conditions, although naturally an extreme involvement of the kidneys will aggravate the clinical symptoms.

The clinical signs are those of hypertension and of secondary circulatory disturbances. The urinary findings are comparatively slight and transient and the patients have no "kidney" history. There is little or no anemia. The development is insidious and the disturbances usually set in with cardiac distress and edema. None of my cases showed any definite uremic symptoms, although, of course, if the destruction of the kidneys is unusually extensive uremia might supervene. The etiology is entirely obscure.

These are the cases which show *very high blood pressure* and extreme cardiac hypertrophy; nevertheless, it must be emphasized again that there is by no means any direct correlation between the extent of the lesions in the arteries anatomically, the severity of the clinical symptoms and the amount of circulatory disturbance developing eventually.

Very interesting to me were two cases in women, in whom long-continued hypertension of 200 and more had been observed for years and *still* there was no cardiac hypertrophy detectable at necropsy.

COMBINATION FORM (VOLHARD AND FAHR)

I have reserved to the last a short discussion of the important problem whether, from an anatomic standpoint, there is any justification for the establishment of an additional group of cases of nephritis which would correspond to the combination form of Volhard and Fahr. It is the conception of these authors that there is a definite group of cases which develop primarily insidiously on an arteriosclerotic basis, but which eventually develop signs, both anatomically and clinically, of true nephritis. These cases, however, as Volhard emphasizes, from the beginning show a more rapid progress and a more malignant development than the ordinary cases of arterial hypertension. This fact alone would suggest that, from the very beginning, they cannot be entirely identical with them; in other words, that they do not commence as cases of uncomplicated arteriosclerosis.

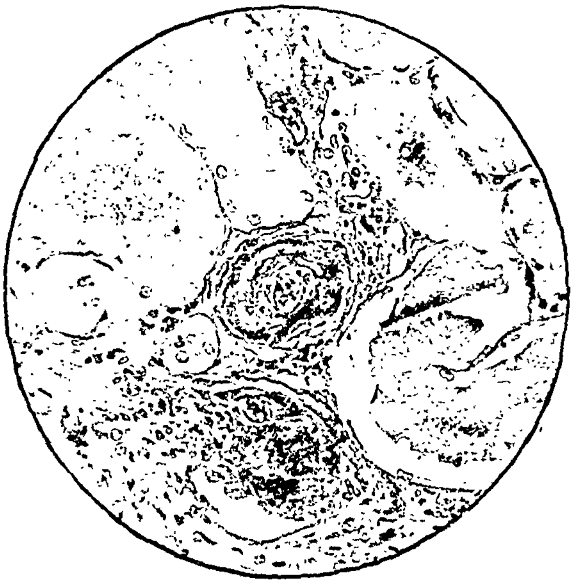

Fig. 12.—Case XVIII, 70, lateral hyaline thrombotic deposit in small artery in process of organization; magnified 210 times.

The difficulty, of course, resides in the fact that in these more chronic cases which come to necropsy, when the destruction of the renal tissue is practically complete and all acute lesions have subsided, it is very difficult to decide in which way the process actually developed, whether on an arteriosclerotic basis or as an unusually chronic form of glomerulonephritis with extensive arterial involvement.[12]

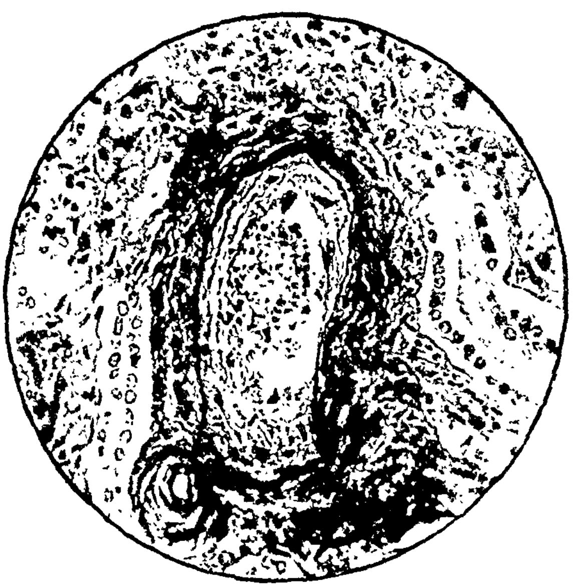

Fig. 13.—Case XVIII, 70, thrombotic deposits in small artery, completely organized. Beginning formation of elastic fibers; magnified 210 times.

In fact, it has been claimed again and again by eminent authority, that such a distinction eventually becomes impossible as it would be impossible, for instance, in a burnt-out building to find out how the fire originated. Among my series naturally there were several such puzzling cases and it was not until after repeated effort and considerable hesitation that they were eventually placed in one or the other category. I may say here that the segregation was made always on anatomic grounds without regard to the clinical history.

In some of these cases I was at first misled by the belief that the structure of the fibrous remnants of the glomeruli afforded some clue as to the nature of their mode of destruction, in this way, that in arteriosclerosis the glomerulus itself merely collapsed and became necrotic, which process was followed by a more or less crescentic fibrous thickening of the capsule; whereas in glomerulonephritis, on account of the more diffuse connective tissue proliferation, a much less definitely defined, diffusely fibrous nodule resulted, in which there often might be seen remnants of the original hyaline material. This is certainly true in the majority of cases, but I eventually recognized that this is by no means a reliable guide. My mind was first disabused of the correctness of this assumption by a study of a case (XV, 120) in which in spite of the fact that in a *child of 6 a general arteriosclerosis* was very unlikely and was actually absent, the glomeruli in the old lesions showed the "arteriosclerotic" picture. It became clear to me that when the glomerulonephritis is largely capsular, eventually a picture is produced exactly like that in arteriosclerosis. Having once clearly recognized this fact it became much easier to place the cases, and subsequent study only helped to confirm my growing belief that all cases in which one could detect definite inflammatory lesions in the glomeruli, even in a few of them only, belonged from the beginning in the group of glomerulonephritis.[13]

In these cases the *finding* of granular leukocytes, especially eosinophils in the interstitial tissue, the presence of neutrophilic leukocytes in the tubules, the occasional hemorrhages, the nature of the changes in the arterioles, the sometimes apparent etiology, all pointed in the same direction, and also the fact that once included in the series of chronic glomerulonephritis, it became *impossible* to sift them out again by repeated reviews of this series.

The fact that in this way all cases showing severe renal symptoms eventually became included in this class and none which had a cardiovascular history may also be looked on as corroborative of the correctness of the classification.

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[12] How little one can depend in making this distinction on the points of difference laid down by Jores between true arteriosclerosis and endarteritis is shown in very many of my specimens. In one and the same section some of the arteries may show the *picture* of "endarteritis" and others of *true* "arteriosclerosis" according to Jores' definition, and it is very evident, from a careful study of such specimens, that the age of the lesion has much more to do with the histologic appearances than the *nature* of it. The older the lesions the more the picture of Jores' true arteriosclerosis is approximated.

[13] A careful review of the specimens on which I based *my first paper* has convinced me that in the group of arteriosclerotic nephritis in this publication there are a few cases which I now would classify as chronic glomerulonephritis. The same is true *of several* of the cases reported in Gaskell's paper.

Whether it will appear advisable, on the basis of more elaborate clinical observation, to subdivide the cases in this group of chronic diffuse glomerulonephritis into two subdivisions, a more acute and a more chronic one, is, of course, another question beyond the reach of my experience. I can only emphasize that from an etiologic and anatomic point of view such a subdivision, at present, appears uncalled for.

In conclusion I wish to emphasize that I do not look on acute, subacute and chronic glomerulonephritis as different stages in development but as different forms of the same disease.

The following is a brief summary of my findings:

1. Nephritis from an anatomic point of view may be best subdivided into: *a*, acute, subacute and chronic *parenchymatous nephritis* which is very frequently associated with amyloid; *b*, acute, subacute and chronic *glomerulonephritis* to which class belong most of the cases with continued definite urinary findings, renal hypertension, uremia and other definite symptoms of renal disease.
2. Hypertonic cardiovascular disease may involve the kidneys more or less extensively, often causes certain functional disturbances in the kidneys, may cause contracted kidney, but should be segregated entirely from true nephritis.
3. The cause of true nephritis is continued bacterial septicemia, and the lesions in the kidneys are probably due to rapid bacteriolysis and incidental liberation of large doses of toxic material in and about the affected glomeruli.
4. The lesions in the arterioles, in at least some of the more chronic cases, are due to the organization of a hyaline (thrombotic?) deposit on the inner surface of the arteries which at times is found underneath the endothelium.

ABSTRACT OF DISCUSSION

Dr. Joseph Von Werthern, San Francisco: I would like to ask Dr. Ophüls if there is any danger in the use of vaccines of having a disastrous effect on the kidney from the introduction of a large amount of such preparations at various times?

Dr. Lawrence Selling, Portland, Ore.: May I ask Dr. Ophüls' opinion on the combination form of Volhard and Fahr?

Dr. William Ophüls, San Francisco: So far as the vaccine is concerned, I really could not answer that question. I have no data on which to base any answer. So far as the combination form of Volhard and Fahr is concerned, it is discussed in my paper, which I abstracted, and I may say that I believe that the cases which they classify as the "combination form" are true cases of nephritis of a particularly slow and insidious type, and that on this account the clinical picture resembles more that of the cardiovascular cases. In these very chronic cases, if you have a good clinical history, you will often find evidence of a preceding infection, sometimes as long as twenty or twenty-five years. Frequently clinical evidence of such infection has recurred at intervals, and when you study the cases histologically, carefully, you find very convincing proof of *old* inflammatory lesions in the kidneys. I may say that I hesitated quite a little in some cases, whether I should classify them under the arteriosclerotic group, or within the inflammatory group. But after I had once made up my mind to put these cases into the inflammatory group, I could not get them out any more. I mean to say that I have gone over the chronic cases of the inflammatory group at least half a dozen times, trying to find cases that could be separated from the rest of them, but it was absolutely impossible. I was perfectly willing to follow Volhard and establish a combination form, but in my series it did not seem to work out that way.

RAYNAUD'S DISEASE

REPORT OF A CASE OF SYMMETRICAL GANGRENE OF UNUSUAL SEVERITY

ARCHIBALD L. HOYNE, M.D.
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Whether the condition known as Raynaud's disease is to be considered of rather frequent occurrence or whether it is to be regarded as an extremely rare affection must necessarily depend on one's conception of this disorder. That many cases have been reported in which the diagnosis rests on an unstable foundation, there is no doubt.

Raynaud,[1] in his famous essay, makes three classifications of the disease which bears his name. He states there may be merely local syncope which usually has a brief existence though it is likely to be recurrent; (2) there may be local asphyxia which is not necessarily preceded by local syncope or (3) there may be symmetrical gangrene. Any one of these conditions of the extremities may occur without being followed or preceded by one of the others.

In local syncope the fingers or toes—more frequently the former—become blanched, presenting a white, waxy, swollen appearance. There is a sensation of burning or tingling in the parts affected and pain even may be extremely severe. This type is practically identical with the condition sometimes found in chilblains and is not infrequently described as "dead fingers."

The second stage, or local asphyxia, appears to be a severer degree of the same pathologic condition, but, as the name implies, the parts assume a cyanotic aspect. As a rule the skin first becomes a reddish purple and then it may return to normal or continue to darken until a blue-black color is attained. As in the first stages, pain may be troublesome and hot applications may afford relief.

The third stage, symmetrical gangrene, is the one with which this paper is chiefly concerned. And in order to put a check on the reporting of miscellaneous conditions as Raynaud's disease, it might be advisable to limit that title to this particular type. In this connection I quote Riggs[2] who says that "the occurrence of local syncope and local asphyxia, either separate or associated, constitutes what is known as 'Raynaud's phenomena,' but the additional element of gangrene is necessary to justify a diagnosis of Raynaud's disease." Now if we are to accept Riggs' definition, and also Raynaud's original view that symmetry of the lesions and absence of demonstrable changes in the blood vessels are two essential features, then in fulfilling those requirements for a diagnosis, it will be found that extremely few cases of Raynaud's disease have been reported in this country. In England, France, Russia and Germany, however, symmetrical gangrene of the extremities seems to be much more frequently encountered.

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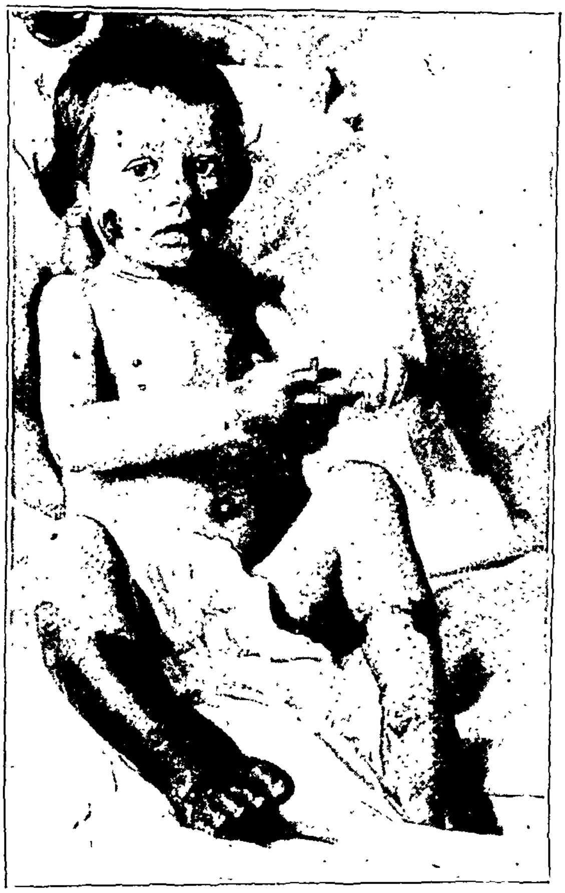
1. Raynaud: De l'asphyxia locale et de gangrène symétrique des extrémités, Thesé de Paris, 1862.
2. Riggs, C. E.: Reference Handbook of Medical Sciences, New Ed., New York, William Wood & Co., 1900, vi, 844.

In a review of the literature here, we find a variety of conditions reported as Raynaud's disease. Some authors[3] cite as cases conditions which appear to be due solely to certain occupations, while others[4] describe asymmetrical Raynaud's disease in which trophic ulcers, diabetes and other pathologic changes are clearly set forth. Numerous instances can be given in which the diagnosis is at least clouded in doubt. Not only is gangrene usually lacking but in many "cases" there is even failure to establish the existence of Raynaud's phenomena.

In looking over the clinical records of the Cook County Hospital, an institution which treats about 30,000 patients annually, as far back as the records are available (1911), I found but three cases with a diagnosis of Raynaud's disease. This is of interest in that: (1) it indicates how rare the condition really must be and (2) it illustrates how a diagnosis of Raynaud's disease may be made though the clinical evidence does not seem to entirely warrant it. All three of the cases just referred to were in adult males. One patient was in the hospital for eight days; ankles and knees were both swollen, while his chief complaint seems to have been pain in the rectum. Weiss has described the latter symptom in a case. In Case 2 the patient had rheumatic pains in ankles and shoulders. He was in the hospital twenty days and the history states that he had "rheumatism six times before." The third patient applied for admission to the hospital at 11:40 a. m. and left at 12:30 p. m. the same day. He was in the hospital forty minutes; he refused to allow a physical examination and left. The diagnosis on his clinical record is Raynaud's disease.

Osler[5] says that in a period of twenty years at the Johns Hopkins Hospital there were but nineteen cases among about 20,000 patients admitted. Of thirty-two cases reported as Raynaud's disease in the United States, previous to 1900, twelve, or about 37 per cent., had symmetrical gangrene, and of the twelve, there appears to have been only one[6] in which all four extremities were involved simultaneously. Hyde[7] reported three cases of "hand and foot disease" in which all four extremities were involved, but there was no true gangrene, the chief characteristic, apparently, having been an onychauxis.



Symmetrical gangrene, fourth day. Remains of old varicella lesions are also shown.

Of ninety-seven cases in the literature, gangrene occurred in forty-nine, but in only thirty-three of these cases was it symmetrical and in many of these latter instances it was extremely superficial. In twenty-one of the thirty-three symmetrical cases, the lower extremities were involved, in nine the upper, in two,[6, 8] both upper and lower and in one,[9] one upper and both lower extremities showed gangrenous changes while the tip of the nose and a portion of one ear was discolored.

ETIOLOGY

Very little is known concerning the etiology. Cases are more frequent in the cold months following exposure. Nevertheless, changes of temperature within doors, which are almost imperceptible, may be sufficient to bring on an attack.

Monro states that heredity is a factor in 8 per cent. of the cases. Nationality also appears to play a part. Of the reports reviewed by me, among which seventeen patients were reported as of foreign birth, more than 50 per cent. were Russians, and in my own case the child was of Polish parentage. Apparently the most severe cases are among foreigners. The disease may occur at any age[10] from infancy up. Of eighty-nine cases in which the age was given, approximately 11 per cent. were under 20 years, 17 per cent. over 50 years and 72 per cent. between the ages of 20 years and 50 years. It is quite generally stated that females are much more frequent sufferers than males. In a review of ninety-five cases, however, I found conditions diametrically opposite, the males being in the majority with 56 per cent., while the cases in females totaled but 44 per cent. It is not necessarily the weak and debilitated who are the victims of this disease.

Some of the predisposing factors are thought to be fright, epilepsy and various neurotic conditions. Anemia, syphilis, tuberculosis and malaria are also frequently mentioned and the invasion of pathogenic bacteria, as in the common infectious diseases of childhood, resulting in a lowered vital resistance, deserves careful consideration. The condition has been preceded by injury and hemorrhages, though under such circumstances there is likely to be some doubt in the diagnosis.

SYMPTOMS

Symptoms have previously been touched on. Pain and an absence of fever at the onset are characteristic.

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[3] Cargile, C. H.: Raynaud's Disease in Stone-Cutters Using Pneumatic Tools, The Journal A. M. A., Feb. 13, 1915, p. 582.

[4] Montgomery, D. W.: Asymmetrical Raynaud's Disease, Jour. Cutan. Dis., 1915, xxxiii, 119.

[5] Osler: Principles and Practice of *Medicine*, Ed. 8, New York, Appleton & Co., 1912, p. 1120.

[6] MacFarland: (Tr. Coll. Phys., Philadelphia, 1898, xx, 160) reports o [illegible] en [illegible] sam [illegible] and o [illegible] it is ve [illegible] of the le [illegible] the nature [illegible] true arterios [illegible] of moist gangrene.

[7] Hyde, J. N.: *Three Cases of Symmetrical Hand and Foot Disease*, Philadelphia, 1887, L, 416.

[8] Morgan, J. D.: Symmetrical Gangrene (Raynaud's) Versus Endarteritis Obliterans, The Journal A. M. A., Nov. *29, 1902, p. 1359.*

[9] Willson, R. N.: Fatal Vasomotor Gangrene Probably due to Raynaud's Disease, Tr. Coll. Phys., *Philadelphia, 1911, xxxiii, 209.*

[10] Sachs, B.: Nervous Diseases of Children, New York, William Wood & Co., *1905*, Ed. *2*, p. *203; Green's Encyclopedia* of Medicine and Surgery, William Green and Sons, Edinburgh and London, *1910*, vii, *468.*

Tips of fingers and toes are most commonly affected; more rarely ears and tip of nose. Contrary to the assertions of most authors, it appears that in the majority of cases reported, the lower extremities were involved. Hyperesthesia to touch is common, and in the first stage or local syncope there is no pitting on pressure.

Loss of sensation in the part affected usually follows when gangrene occurs. While gangrene in Raynaud's disease is presumed to be of the dry variety, some authors state that it may be moist and such was the condition in Macfarland's[6] case. It is not infrequently stated in connection with the symmetrical gangrene of Raynaud's disease that, when tissue death occurs, blebs filled with serum appear on the surface. There was nothing of that character in my case though most reports confirm the assertion. A line of demarcation is usually well developed within a week and the part involved assumes a black, dried, leather-like appearance.

PATHOLOGY

The anatomic cause for true Raynaud's disease is still to be discovered. In 1832, M. Victor Francois[11] of Mons expressed our present knowledge of this condition very aptly when he said "Everything concerning spontaneous gangrene is in a state of distressing uncertainty."

Raynaud believed the condition was caused by a spasm of the arterioles due to some derangement of the central nervous system; that the symmetrical gangrene was due to some error in the innervation of the capillary vessels. Weiss, however, thinks it is not so much the arteries which are contracted as corresponding veins. He also regards the gangrene as trophic, that the vascular spasm is not the cause. Pitres and Vallard[12] found structural nerve changes in cases of symmetrical gangrene. Lustgarten[13] appears to believe that a syphilitic origin is always to be suspected. No pathologic changes, however, should be found in the intima of the vessels in Raynaud's disease. And yet, in spite of this fact, the opinion has been advanced that the condition is due to a proliferation of the endothelial cells. Morgan[8] states there should be no proliferation. It has been suggested by Koga of Japan that an increased viscosity of the blood is responsible for symmetrical gangrene, but such a view is hardly tenable. The theory has also been advanced that the disease is due to some sudden bacterial invasion.

That the central nervous system is partially at fault there can be no doubt. In my case, regardless of what the complete mechanism was, it would seem as though the numerous acute infectious diseases produced a toxemia which impaired the central nervous system either primarily or else secondarily through nutritional changes in the blood.

Granting then that the central nervous system is at fault, it would seem that the origin of many if not all such cases may lie in a depleted blood supply. In other words, the nervous system lacks the proper nourishment necessary to maintain its equilibrium and thus control over the vasomotor system is lost. All reports of symmetrical gangrene seen by me which gave the blood findings showed a marked anemia.

DIFFERENTIAL DIAGNOSIS

If any assignable cause can be given for the affection, it is likely that it is not a case of Raynaud's disease. The following diseases and conditions should be carefully considered and excluded before a diagnosis of Raynaud's disease in any of its forms is made: (1) frost bite, (2) rheumatism, (3) occupational disorders,[3] (4) cardiac defects, (5) embolism, thrombosis, phlebitis, (6) arteriosclerosis, (7) trophic disturbances due to disease of the central nervous system, (8) albuminuria, (9) chronic ergotism or plumbism, (10) diabetes, (11) senile gangrene, (12) traumatism, (13) Morvan's disease, (14) syphilitic endarteritis, (15) sclerodactylia,[14] (16) bilateral ainhum, (17) leprosy, (18) infections including typhoid, malaria, etc., (19) endarteritis obliterans, (20) erythromelalgia, (21) peripheral neuritis, (22) purpura, (23) angioneurotic edema.

Without discussing each of the foregoing, I believe the history in my case will demonstrate that they are all easily excluded. Endarteritis obliterans or thrombo-angiitis as Buerger[15] terms it, might be considered but this condition is progressive and would hardly develop with such rapidity. Collins[16] has written a valuable paper on the classification of circulatory and trophic disturbances.

PROGNOSIS

The disease usually exists for a number of years and acute fatal cases are extremely rare. Even in cases with severe symmetrical gangrene, the outcome is as a rule favorable despite the fact that one or more limbs may be eventually lost. Nevertheless, Fischer[17] states that while records of cures exist, the diagnosis may always be questioned.

TREATMENT

Practically everything has been tried in the way of treatment, including nerve stretching,[18] the Roentgen rays, galvanism and Bier's[19] hyperemia; atropin, nitroglycerin, thyroid extract, salvarsan, injection of normal salt and Ringer's solution. All have had their advocates. Peyton[20] believes that drugs are of no value.

Symptomatic treatment is all that can be advised. The parts should be kept warm and dry and when gangrene develops the case must be considered from a surgical point of view. The illustration, from a photograph taken June 17, the fourth day of the affection, is of particular interest in showing the distribution of the parts involved.

REPORT OF CASE

S. U., a fairly nourished, light complexioned boy 5 years of age, was admitted to my service at the Cook County Contagious Disease Hospital, May 4, 1915, suffering from scarlet fever of three days' duration. He had been an inmate of an orphanage. No other history was obtainable at that time.

Subsequently the following history was secured. Father and mother, of Polish nationality, were both living and well. Two other children, aged 8 and 6 years, were living and well. The first child died of some "head sickness" in the second year of its life. The mother had never had any miscarriages and was six months pregnant.

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[11] Francois, M. Victor: Mentioned in Barlow's Translation of Raynaud's Article for the New Sydenham Society, London, 1888.

[12] Pitres and Vallard: Arch. de physiol., 1885.

[13] Lustgarten, A.: Jour. Cutan. Dis., 1906, xxiv, 272.

[14] Mix, C. L.: Chicago Med. Recorder, 1901, xx, 356.

[15] Buerger, L.: (Am. Jour. Med. Sc., 1915, cxlix, 210) writes concerning vasomotor and trophic disturbances of the upper extremities with particular reference to thrombo-angiitis obliterans.

[16] Collins, H. N.: Ann. Surg., 1914, lx, 742.

[17] Fischer, L.: Diseases of Infancy and Childhood, Ed. 3, F. A. Davis Co., Philadelphia, 1910, p. 883.

[18] Hendon, G. A.: Kentucky Med. Jour., 1908-1909, vii, 221.

[19] Cushing, H. W.: Boston Med. and Surg. Jour., 1904, cli, 269.

[20] Peyton, D. G.: Am. Med., 1904, vii, 518.

The patient had never been ill before; neither coldness nor blueness of the extremities nor hemorrhages of any character had been either complained of or observed. When minor injuries occurred, the blood always clotted readily.

Physical Examination.—The patient presented a typical rash of scarlet fever and did not appear to be extremely ill.

The tonsils were large and inflamed but there was no membrane. Throat and nasal cultures were negative for diphtheria. There was a moderate cervical adenopathy but all other findings were negative.

When admitted to hospital, patient's temperature was 103 F., pulse 126, respiration 32.

The temperature showed a gradual decline until on the fifth day after entrance it began to rise. This elevation of temperature continued for four days when the eruption of measles appeared on the eighth day after admission to hospital. The patient, then, was in the hospital but four days before the onset of measles and consequently contracted this disease outside.

On the fifteenth day after entrance, it was noted on the clinical record that the extremities were cold. On the seventeenth day after entrance, about twelve days following the measles onset or twenty-one days after the onset of scarlet fever, a double otitis media was evidenced by discharge from the ears. The temperature had been normal since the eighth day following the measles onset and there was no elevation of temperature accompanying the involvement of the ears. The child's condition was such that he was allowed to be up and about the ward on the twentieth day after entrance.

Six days later, or twenty-six days after admission, some swelling in the region of the right parotid gland was observed and it was believed the patient had contracted mumps. There were no cases of mumps in the hospital at this time but there had been one case in the same ward several weeks previously. There was no fever at this period nor was the region of the left parotid swollen at any time.

From May 30 till June 6, the temperature continued normal, but on the latter date, an eruption of varicella appeared. The lesions were profuse and the temperature rose to 104. The child had a good vaccination scar. On June 6, the patient coughed a good deal and on the following day a whoop was noticed. In the meantime the varicella lesions continued to appear in fresh crops daily until June 11. During this period the temperature remained high for the greater part of the time but on June 11 it had again reached normal. At this time the patient was somewhat anemic but otherwise his condition was fair. The whooping cough was not of a severe type, the paroxysms being comparatively few in number.

About 8 a. m., June 14, the forty-sixth day after the onset of scarlet fever, the thirtieth day after the onset of measles, the ninth day after the onset of varicella and the seventh day after the beginning of whooping cough, large patches of a bluish black hue appeared on the dorsum of the feet near the base of the toes. Smaller patches on the back of the right wrist were also evident and a small area of discoloration on right cheek. These areas were at first thought to be purpuric in character. The following examinations on this morning with their results follow: heart absolutely negative. Blood count showed 54,000 white cells (due to pertussis), with a differential count of 82 per cent. small lymphocytes, 6 per cent. large lymphocytes and 12 per cent. polymorphonuclear neutrophils. The coagulation time of the blood was about seven minutes. The urine showed a slight amount of albumin with hyaline and granular casts. There was no sugar, no hemoglobinuria. Blood was not present in either the urine or feces.

By evening of June 14, the areas had enlarged. The entire right lower extremity was involved from about one half the distance from the knee down, slightly more posteriorly than anteriorly, the greater part of the calf being affected. The left lower extremity was less affected, the big toe and second toe not being included in the process which did not extend up beyond the ankle except for a separate patch situated posteriorly about the middle third of the calf. During this first day an area, identical in appearance with the others, had developed on the left cheek. This was about the size of a quarter while the patch on the opposite cheek was as large as a silver dollar. All areas described were rather sharply defined and extremely painful. Proximally for some distance above the cyanotic areas on all four extremities the skin had a swollen, tense, waxy appearance. It looked edematous but was rather hard, did not pit on pressure and was very painful. All the affected parts were icy cold from the first. The temperature on this day did not go above 99, pulse 106, respiration 24.

Second day, June 15: Both ears were now discolored over the upper half and became black and cold. The lower extremities began to look gangrenous but there was no extension of the process. In the upper extremities, the left two ulnar and the right three ulnar fingers were black and cold. No blebs containing bloody serum as frequently noted in these cases were observed on any of the areas involved.

At the beginning of the process it was thought to be of a purpuric nature and horse serum was given intramuscularly in 10 c.c. doses every six hours until the end of the second day. On the second day the temperature rose to 101.8 in the evening. The urine showed a faint trace of albumin and there were some hyaline casts.

Third day, June 16: The only change in the lesions was a deepening of the black color, the parts affected remaining ice cold. An examination of the chest disclosed a bronchopneumonia; temperature 103, urine negative. Patient looked very anemic and a blood count showed red cells, 1,840,000; hemoglobin, 35 per cent. (Sahli); white cells, 41,550. Differential: small lymphocytes, 49 per cent.; large lymphocytes, 10 per cent.; polymorphonuclear neutrophils, 37 per cent.; eosinophils, 2 per cent. and transitionals, 2 per cent. On this day the left thumb and thenar eminence appeared very pale and waxlike. Lines of demarcation were being established. The areas on the cheeks appeared improved but the right forefinger had become cyanotic as far as the first phalangeal joint. The patient's general condition appeared greatly improved on this day in spite of his bronchopneumonia. The temperature was 102.2 F., pulse 148, respiration 48. The pain was greatly decreased. He had a good appetite and was much interested in everything about him.

June 18, the fifth day, the boy managed to get the dressings loose and chewed off the tip of the third right digit. There was no bleeding, the finger end resembling a piece of old leather. The gangrenous areas had an offensive odor at the lines of demarcation. The urine continued negative. The pulmonary condition was less favorable. Temperature rose to 103, pulse 144, respiration 58.

June 19, the sixth day, suppuration at the lines of demarcation was evident but all of the original areas were in a state of dry gangrene. The patient had involuntaries. Temperature 102 to 104 F.

June 20, the seventh day, the patient was irrational. The gangrenous portions showed no extension and were assuming the dried leather boot appearance. The skin of the affected parts was an ebony black. All parts were dressed with magnesium carbonate and powdered boric and the open-air treatment adopted.

June 21, the eighth day, the gangrenous portions were drying and beginning to separate. There was little change in the general condition.

June 22, the ninth day, the gangrenous portion of the right ear fell off, leaving a clean border. Temperature fell to 98.6, pulse 148, respiration 36.

June 23, the tenth day, the gangrenous portion of the left ear dropped off leaving a clean margin as in the case of the other ear. The uninvolved parts of the left hand looked very pale, swollen and waxlike. The boy was restless and irrational. Temperature 99 to 101.

June 24, the eleventh day, all the gangrenous areas were becoming loose from their adjoining tissue. On the extremities at the lines of demarcation the slough appeared to extend only to the deep fascia.

June 25, the twelfth day, the bronchopneumonia seemed slightly improved. Temperature 99.2. Dr. Joseph M. Patton kindly made an examination of the patient's heart on this day and reported the findings negative.

June 26, the thirteenth day, the gangrenous patch on the right cheek dropped out without much tissue destruction. Blood for a Wassermann was taken which was later reported negative.

June 27, the fourteenth day, the gangrenous patch on the left cheek extended to a slightly greater depth than on the opposite side and the resulting scar was consequently more extensive. The general condition of the patient was considered fair under the circumstances, though the pulse and respiration were rapid and bronchopneumonia was still present. The child, however, seemed to be losing in strength. He was toxic, had involuntaries, but apparently suffered little pain. The involved regions were dry except at the demarcation borders, and were shriveling up and separating. On the evening of this day, the child died as a direct result of the pneumonia, but a general toxemia was of course a strong contributing factor.

Had it not been for the pneumonia, it is possible the patient would have eventually recovered. Nevertheless amputation of both lower extremities, one at the upper third and one at the middle third of the leg, would have been inevitable. It would also have been necessary to adopt a similar procedure with respect to the greater part if not all of both hands.

The blood examination on the last day was as follows: Red cells, 1,650,000; hemoglobin, 27 per cent. (Sahli); white cells, 36,000. Differential, 200 counted, small lymphocytes, 41 per cent; large lymphocytes, 4 per cent.; polymorphonuclear neutrophils, 51 per cent.; eosinophils, 1 per cent.; transitionals, 3 per cent.

NECROPSY

In 1901, Greiwe[21] stated that the number of cases of Raynaud's disease examined postmortem could be summed up on the fingers of one hand. Consequently it is to be regretted that space does not permit the presentation of the complete necropsy findings.

Among the chief points demonstrated by Dr. H. Gideon Wells, who performed the necropsy, are the following:

On cut section, the gangrenous areas over the legs were found to be markedly edematous and to involve all the soft tissues down to the bone, which also showed erosion. The thymus was smaller than normal. The thyroid seemed somewhat enlarged and succulent; no gross changes were noted.

The heart was normal in size. No changes were seen in the aorta. The valves were normal.

The lower lobes and lower half of the upper lobes of the lungs were consolidated.

The kidneys were very pale, somewhat firmer than normal. Cross-section showed them markedly pale but otherwise normal. The adrenals were enlarged.

The large vessels of the lower extremities showed no evidence of thrombosis or embolism. The right femoral vein showed a large antemortem clot.

ANATOMIC DIAGNOSIS

1. Acute symmetrical dry gangrene of both lower extremities, both upper extremities and cheeks, with beginning sequestration.
2. Thrombosis of right femoral vein. Dr. Wells believed this to be of recent formation and secondary to the gangrenous process.
3. Bilateral confluent pneumonia of both lower lobes. Discrete bronchopneumonia of both upper lobes.
4. Acute hyperplasia of peribronchial lymph glands.
5. Perilobular infiltration of liver.
6. Fatty degeneration of the kidneys.
7. General lymphadenoid hyperplasia including glands, spleen and Peyer's patches, the latter of which were pigmented.

Later Dr. Wells reported that the histologic examination gave no definite findings which could throw light on the etiology of the gangrene.

Dr. George Mather, of the Memorial Institute for Infectious Diseases, conducted a bacteriologic examination. He made cultures from the thrombus of the right femoral vein and isolated a green streptococcus and a hemolytic streptococcus. Injected into rabbits, these caused a malignant endocarditis.

25 East Washington Street.

AN UNUSUAL CASE OF SALVARSAN POISONING

Karl C. Eberly, M.D., Fort Wayne, Ind.

Mr. B., aged 36, consulted a physician for lightning pains in the calves of his legs, occurring chiefly at night. Family history was negative. His past history gave no definite evidence of syphilis, although, twelve years ago, he had gonorrhea and thought possibly that he had contracted syphilis at the same time. The Wassermann on the blood was strongly positive. Physical examination was negative. Neural examination showed no other signs than absent knee-jerks. No examination of the spinal fluid was made.

An early tabes was diagnosed and neosalvarsan was chosen for treatment. Through an error 0.6 gm. of salvarsan was mixed in 10 c.c. of freshly distilled water, only a part of it dissolving. This unneutralized solution of salvarsan was injected into the cephalic vein of the right arm. Almost instantly the patient complained of a choking sensation and constriction of the pharyngeal muscles. He became extremely pale, pulse was small, weak and rapid. Respiration was dyspneic. At once the needle was removed, about 5 c.c. having been injected. Within an hour he was markedly prostrated, coughed and vomited and complained of general weakness and pain in the region of the left kidney. Nitroglycerin 1/100 grain was administered orally every twenty minutes until the pulse improved. Then it was repeated every two hours.

For the next twenty-four hours his general condition remained the same. He voided no urine. A catheterized specimen of 3 ounces showed a trace of albumin but no casts. On the second day the pain in the region of the left kidney and suppression of urine continued. The patient complained of weakness, chilling and a general myalgia. A phlebitis started in his cephalic vein, extending from the point of injection to the shoulder. The arm was swollen, reddened and painful. The vein appeared to be completely obliterated. His temperature and pulse were 100.

On the third day I was consulted over the long distance telephone. Fischer's solution, hot packs, saline cathartic, potassium acetate ,and digitalis were suggested to increase the elimination and local applications for the phlebitis. Fischers' solution, 6 to 8 ounces, was given every four hours by rectum and 1 dram of sodium bicarbonate every two hours by mouth. The other drugs were administered in the customary dosage. During the next twenty-four hours he excreted 15 ounces of urine, and the pain in the region of his left kidney was much improved. His prostration diminished but the severity of the phlebitis increased. His arm became much more painful and swollen. His temperature was 101, pulse, 105. On the seventh day I first saw the patient. He was a strong, powerfully built man, well nourished but now appeared thoroughly exhausted. He complained of weakness and pain in the right arm. This arm was twice its normal size and severely inflamed. The cephalic vein was palpated as a rigid tube. Physical examination of the heart and lungs was negative. The pulse was rapid—100—but of good volume and tension. Temperature was 102.4. Since the third day the amount of urine had gradually increased to normal. The urine showed a trace of albumin without casts.

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[21] Greiwe: Philadelphia Med. Jour., 1901, viii, 236.

The leukocytes numbered 12,500. The differential gave 80 per cent. polymorphonuclears. The diet had been liquid.

After six weeks the phlebitis subsided, the urine became free from albumin and apparently he has not suffered any permanent lesion from this mistake.

Whether the marked toxic symptoms were due to the acidity of the solution or the salvarsan would be difficult to say. It is of interest, however, to note that the alkaline therapy relieved the anuria and toxic symptoms almost immediately.

Gauntt Building.

TUMOR OF THE HAND CAUSED BY FOREIGN BODY

F. P. Hammond, M.D., Chicago

R. S. S., an American, aged 30, complained of a tumor mass the size of a hazelnut which had been deeply seated in the thenar eminence of the left hand as long as he could remember. Only occasionally did the mass produce any discomfort yet a constant worry possessed him lest some day it should turn into a cancer. About six weeks ago it began to enlarge toward the surface, became slightly reddened and tender and seemed to grow gradually and slowly worse, which alarmed him sufficiently to cause him to seek treatment.

His family history was negative. His past history was negative, except that about two months ago he remembered giving the "lump" an accidental bump while swimming, a fact he had almost forgotten because it caused him so little pain.

For the last six years the patient had been a university student, previous to which time he worked on his father's farm. He denied venereal history.

A general examination was negative in result; there were no other enlargements. Temperature and pulse were normal.

Local examination revealed the tumor to be hard and elastic, movable, with a cone-shaped projection toward the surface, slightly tender and reddened but with no demonstrable fluctuation and apparently no connection with the bone.

The Wassermann test was negative. The Roentgen ray revealed nothing.

Diagnosis of a chronic attenuated infection probably due to a foreign body was made and under local anesthesia the mass was incised. About 1 cm. from the surface the slightest bit of pus exuded. Deep in the center of the mass a locust thorn 8 millimeters in length was discovered and removed.

On seeing the thorn he exclaimed, "Well, let me see, I was about 11 or 12 years old when I got that sliver." It is needless to say an uneventful recovery followed.

30 North Michigan Boulevard.

Removal of Swallowed Foreign Bodies.—The following may be of interest to some on account of the simplicity of the treatment. I claim no originality for it: Mr. C. B., aged 29, came to my office, October 7, complaining of a pricking sensation in the left hypochondrium, annoying him, but felt only occasionally. Twenty-four hours previously, while eating some pudding, he bit on a hard object, which proved to be a piece of glass. He did not think he swallowed any glass, but in view of the history, I concluded that he had. I gave him about 2 or 3 drams of absorbent cotton, with instructions to pick it into small shreds, put them into a glass of milk and drink the mixture. In addition, I gave him half an ounce of magnesium sulphate crystals, with instructions to dissolve in a half glass of water, and take one hour after the milk and cotton. The motions were passed in a vessel, and on examination, a wedge-shaped piece of glass about three-eighths inch long, very sharp, was found entirely covered with cotton. The pricking sensation disappeared. Tacks, pins and other pointed or rough foreign bodies may be easily removed by this means in many instances.

R. Penn Smith, M.D., Pittsburgh.

Therapeutics

TOXICOLOGY OF EMETIN

Dr. F. B. Sigworth, Albuquerque, N. M., writes:

Will you please give me the toxicology of emetin hydrochlorid used in hemorrhage? I wish to test it for its effect in tuberculosis; also to try it out experimentally on guinea-pigs.

Comparatively little has been added to our knowledge of the systemic actions of emetin in mammals during the past few years, and the descriptions in recent text books of toxicology are much like those given by Lewin in 1888.

The following statement is based largely on the statements of Kunkel[1] and von Jaksch.[2]

Emetin is an active local irritant, causing inflammation, and even ulceration of the tissues with which it comes into contact in sufficient concentration. When powdered ipecac is handled, it may give rise to irritation of the eyes and even ulceration of the cornea, and cause burning in the mouth and throat. The inhalation of the powder causes a sense of oppression in the chest and difficulty in respiration (so-called emetin asthma).

The application of an ointment containing emetin or ipecac to the skin causes irritation, progressing to pustulation with the continued application of strong preparations.

The subcutaneous injection of emetin causes pain, swelling and even ulceration.

Emesis following the oral administration is generally attributed to the local irritant action on the gastric mucous membrane; if emesis fails to occur and emetin passes into the intestine, it gives rise to diarrhea, and this may be bloody, the latter effect being augmented by the extreme dilation of the intestinal vessels. If absorption occurs, systemic effects follow.

The systemic effects observed after the entrance of emetin into the blood stream include general depression with failure of respiration, due to paralysis of the center, and cardiac failure due to the direct action of the emetin on the heart and circulation. There is a profound fall of blood pressure because of the cardiac and vascular effects.

The central nervous system undergoes rapid depression and paralysis even in the frog, which is not immediately killed by removal of the heart. Emetin stops the mammalian heart in diastole.

Alterations in the blood have been described; these are attributed to the accumulation of acid products of metabolism, but they are not responsible for the effects just described.

Kunkel describes the effects of toxic doses of from 50 to 100 mg. per kilogram of body weight in the cat and dog, but the results of experiments performed in the laboratory of the writer (unpublished) show that as little as 2 mg. of emetin per kilogram administered intravenously may cause some depression at times, while doses of from 8 to 12 mg. per kilogram cause general depression with weakened and accelerated heart and lowered blood pressure. There is an apparent improvement after a short time, but usually these doses are fatal within forty-eight hours. The effects of the oral administration of emetin in solution are about like those seen after intravenous injection, but death may occur with general paralysis and cardiac failure within three minutes after the intravenous injection of a large dose (15 mg. per kilogram).

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[1] Kunkel: Handbuch der Toxicologie, 1901, p. 841.

[2] Von Jaksch: Die Vergiftungen, Ed. 2, 1910, p. 493.

It is generally stated that emetin causes emesis only through its action on the gastric mucous membrane, but it also causes emesis after the intravenous injection into a dog from which the gastro-intestinal tract has been removed; hence it is also capable of acting on the vomiting center directly.

One observer reported that vomiting, colic, abdominal cramp and collapse occurred, followed by death within an hour and a half after a patient had taken a large amount of wine of ipecac. Hyperemia of the tomach and duodenum were found at necropsy.

Several authors state that the toxicology of emetin s not very important, and von Jaksch states that the prognosis in case of poisoning by it is good. The diagnosis is made by finding the alkaloid in the vomitus.

Emetin is absorbed from the gastro-intestinal tract when given in solution more readily than when adminstered in the form of a preparation of ipecac. Tannin, n the form of krameria, is recommended as the antidote in such cases.

The following observation of Kunkel's is interesting n view of the date of his writing it and the use of emetin in hemoptysis at present. He says (1901) that it was formerly believed that emetin induced a specific anemia of the lungs from which circumstance it was used in hemoptysis. He states that the belief probably arose from the observation that the pulmonary vessels of animals that had been killed with emetin were empty, which he explains as being due to the maximal dilation of the vessels of the splanchnic area, with the consequent drainage of the pulmonary vessels.

This observation of Kunkel's is at least worthy of attention at this time, in view of the fact that even small doses of emetin are capable of causing depression.

THE SO-CALLED CONCENTRATED SOLUTION OF SILVER IODID

John K. Thum, Ph.G., pharmacist at the German Hospital, Philadelphia, writes:

> There is on the market, at the present time, a so-called soluble preparation of silver iodid. That is to say, the silver iodid is in concentration in the form of a solution, and the addition of this solution to a designated volume of water makes a 5 per cent. suspension of silver iodid. Whether this method of dispensing silver iodid possesses any advantages over the usual method is questionable. In my opinion it would be far safer for a patient to receive a freshly prepared precipitate of this chemical, well washed, and held in suspension with the aid of a solution of gelatin, Irish moss, or some other appropriate gummy substance.
>
> This solution of silver iodid is made by taking advantage of the fact that silver iodid is soluble in an excess of potassium iodid. One of the claims made for this preparation is that "it is also less expensive" than preparations of the same salt sufficiently diluted for immediate use. When one considers that the solution of this salt requires *a considerable excess* of potassium iodid (the preparation on the market showing on analysis at least 60 per cent. of free potassium iodid), and then considers the price of potassium iodid even in normal times, one is averse to agreeing with this statement.
>
> It is also well to remember that potassium iodid as found on the market is usually quite alkaline, and while it may be true that such a preparation is painless when introduced into the urethra, this does not prove that it is harmless. It is also well to remember that suspensions of silver iodid are frequently used in eye infections, and for that purpose should be very carefully prepared, the silver iodid first being carefully and thoroughly washed with sterile distilled water. If this technic is not followed, the application of the preparation to an eye condition will result in much irritation, pain and an inflammatory condition which it is difficult to control.
>
> My investigation of this preparation revealed that it can be prepared readily according to the following formula:

	gm. or c.c.
Silver nitrate................	3|70
Potassium iodid.............	17|00
Distilled water............ad	25|00

> This volume of 25 c.c. solution, when added to 75 c.c. of distilled water, makes a 5 per cent. suspension of silver iodid.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

BISMUTH TRIBROMPHENATE.—**Bismuthi Tribromphenas.**—Bismuth Tribromphenol.—$Bi(C_6H_2Br_3O)_2OH.Bi_2O_3$.—Basic bismuth tribromphenate.

Actions and Uses.—Bismuth tribromphenate is claimed to be a nonirritant and nontoxic antiseptic. It is said to be useful as an odorless and efficient substitute for iodoform; as valuable in ulcus cruris and all weeping eczemas; internally, in gastro-intestinal catarrh, proctitis, dysentery, bacillary and choleraic diarrhea, cholera infantum, etc.

Dosage.—From 1 to 3 gm. (15 to 45 grains) per day to adults; from 0.12 to 0.3 Gm. (2 to 5 grains) at a dose to children. Externally, as a dusting powder, in bandages, etc., like iodoform.

Nonproprietary Preparation:

Bismuth Tribromphenate, Merck, Merck and Co., New York.

It is a fine yellow, nearly odorless and tasteless powder, neutral in reaction, and unaffected by light. It is only slightly soluble in water, alcohol, chloroform, liquid petrolatum and vegetable oils, but soluble in 2 per cent. hydrochloric acid. By alkalies it is decomposed with the formation of bromide; it is not decomposed by heat at temperatures below 120 C., and therefore may be sterilized.

It should yield not less than 49.5 per cent. of bismuth oxide. If 1 Gm. is boiled with sodium hydroxide T. S. and filtered, the filtrate rendered acid with sulphuric acid and the white, curdy precipitate washed and dried, it should melt at 95 C. (tribromphenol).

It is incompatible with alkaline mediums and should not be heated above 120 C.

BUTYL-CHLORAL HYDRATE (See N. N. R., 1915, p. 77).—The following non-proprietary preparation has been accepted:

Butylchloral Hydrate Merck.—Manufactured by E. Merck, Darmstadt, Germany (Merck and Co., New York).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 13, 1915

SUGAR IN NORMAL URINE

With the increasing number of tests for the presence of sugar in the urine has come an attempt at greater delicacy in the reaction involved. Just as Fehling's test far exceeded in sensitiveness some of the older methods for the detection of sugar, so the newer tests recommended from time to time have as a rule been characterized by the property of revealing smaller and smaller amounts of the carbohydrate. With the exception of the fermentation test, most of the reactions are really indirect in indicating the presence of sugar. Most of them are reduction tests involving the use of salts of copper or other metals.

Inasmuch as other urinary components besides sugar may reduce the cupric solutions, it is sometimes difficult to decide whether traces of observed reaction are due to sugar or to other constituents such as creatinin. From this point of view a reagent may sometimes be unduly sensitive and give a false answer in respect to the occurrence of sugar. On the other hand, certain urinary compounds also interfere with the delicacy of the tests by preventing the separation of small amounts of red cuprous oxid on the familiar appearance of which the clinical observer so often depends.

Folin[1] has lately devised a reagent which combines extreme sensitiveness to sugar with the property of removing creatinin and other interfering substances from the urine. In the course of nearly a hundred tests made with this new reagent on the urines of as many different normal persons (students), Folin obtained a positive reduction in every case. This corresponds with the statement occasionally made that traces of sugar are present in practically every urine. Various investigators have succeeded in demonstrating the probability of this by concentrating larger amounts of urine and making tests on suitably prepared fractions thereof.

It would, after all, be strange if an organ like the kidney which responds so readily to very small changes in the usual concentration of blood sugar should retain an absolutely complete impermeability to a sugar level only very slightly lower than that which leads to easily detected glucosuria. It is theoretically easier to conceive of the "impermeability" as being relatively rather than absolutely perfect; or, if one is committed to a different explanation of the sugar-free character of normal urine, a comparable contrast applies with equal force. The demonstration given by Folin's new test therefore need not surprise us. As he says, the amount of sugar present in normal human urine is probably greater than is indicated by the negative findings recorded on the basis of the clinical qualitative tests for sugar in current use. Those who, like life insurance examiners, change their analytical methods from time to time in order to secure greater sensitiveness and detect smaller contents of sugar in urine, must be prepared to reach a point at which they encounter normal rather than pathologic sugar excretion. This is only an added instance of the vague borderline between the normal and the abnormal.

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[1] Folin, O.: A Qualitative (Reduction) Test for Sugar in Normal Human Urine, Jour. Biol. Chem., 1915, xxii, 327.

THE LOCALIZATION OF STREPTOCOCCI

The relation to infection of the affinity of bacteria for certain tissues was discussed recently in these columns.[1] It was pointed out that many of the pathogenic bacteria in their localization manifest a special affinity for some particular tissue or tissues. This elective localization may be conceived to be due to the circumstance that the conditions for growth are more favorable in some tissues than in others. On account of differences in metabolism and chemical composition, there is no doubt that different tissues and places in the body present radically different conditions for bacterial growth and activity. It was pointed out, further, that the work of Forssner and especially the more recent work of Rosenow have established that among the streptococci, which have the power to invade many tissues and to cause a variety of infections, strains may appear which, when introduced into the blood, are found to localize by preference in certain tissues. In his article in this issue of The Journal, Rosenow[2] presents a summary of the results of his experiments of elective localization of streptococci obtained from a wide range of human infections and injected intravenously into dogs and rabbits. The animals were killed soon after the injection, and the facts as to localization of the streptococci determined by systematic, careful examination of the whole body. Obviously this method gives a much better idea of early localization than can be obtained if only the animals that die are examined.

Stated in the simplest way, the results obtained by Rosenow with his method show (1) that streptococci isolated from active lesions in different human organs and tissues, in many instances, have a pronounced affinity for the corresponding organs and tissues in rabbits and dogs, and (2) that streptococci isolated from the tonsils and pyorrheal pockets in persons with active streptococcal infection in the interior of the body may have the same sort of affinities as the streptococci from the internal lesions. In the light of these results, many of which are striking indeed, as may be seen at a glance from the table in Rosenow's article, human streptococcus infections acquire new interest because a road now opens to a better understanding of their genesis and of the difficulties of curing them by the specific means now in use. Obviously a chief danger from chronic foci in which streptococci are present, of which those in the tonsils and about the teeth appear to be the most important because the most common, seems to depend on the fact that in such foci, even when quiescent, streptococci may get into biochemical conditions which fit them for invasion of the blood, to be followed by localization in some tissues rather than in others. Persons going about with chronic, more or less latent foci of this character, consequently, are not only dangerous to themselves in that what one may call internal streptococcal metastasis may occur at any time, but they are also undoubtedly dangerous to others because they scatter about them streptococci of specialized pathogenic possibilities. Hence the efforts now made to detect and then to obliterate all forms of focal infection in the mouth and throat as well as elsewhere in the body, for preventive as well as curative purposes, besides being in accord with sound reasoning from general principles, here receive the support also of strong experimental evidence. When we consider the wide range of action of pathogenic streptococci, the great variety of disease due to their localizations in different tissues according to what Rosenow's work indicates are states of special "elective affinities," no effort should be spared that in any way will tend to reduce the supply of such streptococci and lessen the chance of infection.

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[1] The Relation of Selective Tissue Affinity to Infection, editorial, The Journal A. M. A., Sept. 26, 1915, p. 1114.

[2] Rosenow, E. C.: Elective Localization of Streptococci, The Journal A. M. A., this issue, p. 1687.

At this point it may be well to recall that we owe it especially to Rosenow's work that we now understand more clearly than before the part played by streptococci in causing gastric and duodenal ulcer, cholecystitis, appendicitis, herpes zoster and erythema nodosum, as well as the joint and other infections long accepted as streptococcal in nature. In showing that streptococci cause gastric and duodenal ulcer, herpes zoster and erythema nodosum, Rosenow has broken new ground, and if future work confirms his results, particularly as to gastric and duodenal ulcer, great progress indeed will have been made. To this already formidable list of streptococcal diseases Rosenow now adds still another, namely, mumps, being careful to note, however, that the organism he finds does not seem to differ essentially from that described by Laveran, Herb and others as the cause of this disease. This raises the question whether all the organisms classed by Rosenow as streptococci will be accepted by bacteriologists as entitled to classification as streptococci. It would seem possible that some of these organisms, as, for instance, the one in mumps, may be found to be independent forms with rather constant affinities, such as illustrated by the meningococcus, for example. The fact that the organism isolated by Rosenow from mumps did not localize in the testicles is contrary to expectation, being another point that will require further investigation. Still another question, and one of fundamental importance, remains to be answered, and that is the question as to the antigenic properties of streptococcal strains of different affinities as postulated by Rosenow. Is a streptococcus that has special affinity for articular structures capable of causing the production of the same antibodies and subject to the action of the same antibodies as a streptococcus that has special affinity for the gallbladder? Or are streptococci distinguishable into a number of groups by means of immunologic reactions in the same general way as pneumococci? This question must be answered before any real advance can be made either in serum treatment or in vaccine treatment of streptococcus infections.

It is quite self-evident, so far as vaccine treatment is concerned, that for the present the free use of stock streptococcus vaccines, as advocated with unwarranted assurance by manufacturers, is not justified. The only vaccine to be used in the infections under consideration, if any, is the autogenous, that is, one made from cultures of the organism isolated from the lesion of the patient whom the physician wishes to treat with vaccine. Only by so doing will the right thing be done, because the autogenous vaccine will represent most closely in all its reactions the particular bacterial strain that is to be attacked.

WHY NOSTRUM MAKERS FAVOR SECRECY

Physicians know what the *National Druggist* stands for. For years it has championed the "patent medicine" business and for years, too, it has blackguarded the medical profession generally and the American Medical Association specifically. It is published by Henry R. Strong of St. Louis, who also publishes the *Medical Brief*. Physicians will remember at least some of the pamphlets issued by the *National Druggist* in its attempt to discredit the medical profession: "The Menace of the Dispensing Doctor," "The Machinations of the American Medical Association," "Confiscatory Legislation" and "A Conspiracy to Establish a Physicians' Trust." These were some of the tirades that emanated from this source in the nation-wide attempt to indict the medical profession.

It is not surprising, therefore, to find the *National Druggist* urging "patent medicine" makers to refuse to obey the law that is to go into effect in New York City on the last day of this year. As our readers will remember, the revised health code of New York City requires that on and after December 31, 1915, patent or proprietary medicines must either bear on their labels the names of the active ingredients, or the names of these ingredients must be deposited, in confidence, with the Department of Health. The *Weekly Bulletin* of the New York Department of Health for October 30 reprints a communication "which the publisher of the *National Druggist* is sending to druggists throughout the country." It is an interesting communication. It assumes that "the Health Board wants these formulas to be used as evidence in prosecutions under the Food and Drug laws, not only of the state and city of New York, but of the federal government as well." Being thus convinced that the ordinance is a deep plot, the communication continues:

> "The medical plotters have not yet obtained a conviction in a single case under the Sherley Amendment in which the defendant has put up a fight, for *it is practically impossible to prove that the therapeutic claims made for a preparation whose composition is not known* are 'false and fraudulent.' And since they cannot obtain this information by analysis, they are seeking to inveigle the manufacturers into furnishing it themselves. Once, however, they are given the formulas, they can get as many doctors as is necessary to testify that the preparations made according thereto are not good for the diseases for which they are recommended; and suits may be brought against all who may ship their products to New York City, regardless as to where they live, and manufacturers may have to go to that city to defend themselves." [Italics ours.—Ed.]

Put in other language, the thought conveyed by the foregoing paragraph could be expressed thus: We know that most "patent medicines" are swindles and that the therapeutic claims made for them are false and fraudulent, but so long as we can keep up the element of secrecy regarding composition, the courts will have difficulty in convicting the business! The most avowed enemy of the fraudulent "patent medicine" business has never brought so strong an indictment against the trade as this one, delivered by its friend, the *National Druggist*. The communication closes with the declaration that if the New York ordinance is upheld, other cities and states will be likely to adopt similar measures with the result:

> ". . . manufacturers . . . will have *to give up the trade secrets* upon which the prosperity of their business depends; and more serious still, *they will be supplying evidence which may result in their own undoing.*" [Italics again ours.—Ed.]

All of which means that just so soon as the element of secrecy is removed from fraudulent "patent medicines" the manufacturers will no longer be able to keep out of jail. No wonder the nostrum interests fight the disclosure of formula. No wonder the *National Druggist* fears for its clientele.

THE LECITHINS OF MILK

The nitrogenous and phosphorized fatlike compounds described as lecithins, and more recently designated phosphatids in scientific literature, have been popularly endowed with a variety of potent virtues. In medical advertising, in particular, effects on growth and a number of tonic properties have been ascribed to these "lipoids." There is no doubt that phosphatids are widely distributed in both animal and plant tissues, and in view of this they doubtless play significant parts in various biologic phenomena. Their abundance in nervous tissue, their involvement in the structure of the blood corpuscles, their presence in large amounts in the yolk of the egg — the early nutrient of the young of certain species — point clearly to the importance of phosphatids in the functions of animals.

The question of the existence of phosphatids in milk has been answered in different ways by successive investigators. Presumably competent biochemists have affirmed, others have denied the fact of such occurrence. Even a critical, trained reader would find it difficult to form a judgment on the subject. The reason is largely centered in the methods employed. The detection of the lecithins has ordinarily been indirect in character. Extracts of milk, made with organic solvents, have been tested for phosphorus and nitrogen; and if these elements were detected in so-called "lipoidal" fractions, the presence of a phosphatid was postulated. It happens, however, that such solvents as ether do not always extract true phosphatids from animal tissues and fluids, because these compounds seem frequently to be chemically combined with other substances, such as proteins, from which they need to be liberated before they become "lipoid-soluble." Egg-yolk, for example, yields far more lecithins to the solvent ether if the material has first been treated with alcohol. The nature of these native combinations of phosphatids with proteins is as yet not understood; in any event, they are easily disrupted by so mild a treatment as boiling with alcohol. The facts may be expressed by saying that the lecithoproteins are not soluble in ether; the lecithins are soluble. It will thus be understood that the usual mode of extraction with organic solvents may or may not yield phosphatids, the outcome depending on the preliminary treatment. Hence the discrepant statements of the older literature. In plants, the phosphatids are even combined with carbohydrates in some cases. Thus the chemical problems of these lipoid compounds have become even more complex and uncertain with the progress of knowledge.

The evidence of at least two phosphatids in cow's milk has at length been definitely settled by the excellent investigation of Osborne and Wakeman[1] under the auspices of the Carnegie Institution of Washington. Their unique success has depended on the actual isolation and identification of the compounds made possible by the utilization of hundreds of quarts of milk. One of the phosphatids thus separated contains nitrogen and phosphorus in the 1 : 1 or monamino phosphatid ratio; it yields the nitrogenous base cholin, glycerophosphoric acid and fatty acids, and otherwise resembles the typical lecithin of the textbooks. The other milk phosphatid found contains nitrogen and phosphorus in the 2 : 1 ratio, belongs to the group of diamino phosphatids, and is apparently similar to a compound of this type which has been obtained from egg-yolk, kidneys and other animal organs.

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[1] Osborne, T. B., and Wakeman, A. J.: Some New Constituents of Milk, First Paper, The Phosphatides of Milk, Jour. Biol. Chem., 1915, xxi, 539.

From the failure to extract phosphorus-containing residues from milk solids by treatment with dry ether, it is evident that the phosphatids are not associated with the common fats or glycerids of milk, which has frequently been assumed. Further evidence of this is furnished by the recently announced fact that butter-fat can be freed from all but extremely minute traces of nitrogen and phosphorus by purely mechanical methods.[2]

PHYSIOLOGIC ASPECTS OF SPINAL ANESTHESIA

The advent of a new and manifestly important technic in the field of clinical medicine or surgery almost presupposes a careful experimental study of its scientific aspects. Modern spinal anesthesia belongs to this category. There is a large literature already available on the clinical aspects of this type of procedure, its successes and limitations, and its advantages and disadvantages. Nevertheless the data on the fundamental responses of the organism to spinal anesthesia and their interpretation under conditions of rigid scientific critique are surprisingly meager. The situation is excellently summarized as follows: "The dangers and discomforts of ether anesthesia have long been recognized. Inevitable nausea, possible pneumonia, difficult respiration, renal injuries, make ether anesthesia impossible in certain cases, dangerous in others, and distressing in all. To meet these difficulties, spinal anesthesia was devised for use in fields where general anesthesia is superfluous, such as operations on the perineum. As a rule beneficent spinal anesthesia is nevertheless by exception open to a grave and sudden danger. In the course of surgical procedures otherwise completely successful, the vasomotor apparatus may suddenly give way. The fall in blood pressure is immediate, sometimes profound, always disquieting. Nor can the surgeon predict in what patient it may appear."[3]

It is obvious that the new method, to be completely successful and satisfactory, must suspend sensations of pain without at the same time paralyzing those regions of the spinal cord which are of importance for functions of the body which cannot well be interrupted. These include preeminently the respiratory and vasomotor responses. Vascular changes which will exsanguinate the "master cells" of the spinal bulb are certain to produce untoward results. A drug may affect the respiratory center either directly, or indirectly by lowering the blood pressure to a point where there is not enough of the circulating fluid to supply the nutritive needs and furnish sufficient oxygen to the bulb. Insufficient blood supply to other regions of the cord may affect other vital functions. It is not sufficiently realized that the vascular area of the abdominal viscera alone is so large as to make splanchnic paralysis very serious. Smith and Porter[3] remind us that the dilatation of the arteries controlled by the splanchnic vasomotor fibers may allow so much blood to enter the corresponding veins that not enough is left in the bulb and cord to support their needs. They state that a rabbit, for example, "may be bled to death into its own portal system, by section of the splanchnic nerves."

The injury to nerve cells caused by low blood pressure and consequent impaired nutrition to them depends on the low level to which the pressure falls rather than on the percental or absolute fall. The duration of the low pressure is an added factor, for nerve cells are notably sensitive to lack of nutrient surroundings. Smith and Porter,[3] at the Harvard Medical School's Laboratory of Comparative Physiology, have just published an elaborate study of the blood-pressure changes in spinal anesthesia with novocain or tropacocain. In their experiments, out of twenty subjects (animals), there was only one case in which a moderate but adequate injection in the lumbar region caused a fall of blood pressure which might have been serious. In the cases suitable for this observation, there was no paralysis of respiration after lumbar injection.

There are, however, marked falls in blood pressure. Recovery from them may take place. Of course, injections can be made so as to reduce the blood pressure very materially and paralyze the vasomotor apparatus as effectually as if the spinal cord had been extirpated. For this result one need only enter the vertebral canal at higher levels, such as the cervical region. These are of only indirect interest in a practical way, because the lower regions alone are ordinarily entered in surgery. It is important to learn that after dorsal or lumbar injection the fall of blood pressure is due to paralysis in the splanchnic area, not to involvement of the bulbar vasomotor center.

It would be almost ideal if a spinal anesthetic were found to paralyze the afferent sensory paths alone in the cord; but a strength of drug sufficient to do this will also paralyze the efferent vasomotor fibers. So far as the diffusion of the drugs used is concerned, on the whole, the bulk of the solution seemed to Smith and

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[2] Osborne, T. B., and Wakeman, A. J.: Does Butter-Fat Contain Nitrogen or Phosphorus? Jour. Biol. Chem., 1915, xxi, 91.

[3] Smith, G. G., and Porter, W. T.: Spinal Anaesthesia in the Cat, Am. Jour. Physiol., 1915, xxxviii, 108.

Porter to be of greater importance than its strength. Dilute solutions usually, but not always, spread farther than concentrated ones. Gravity, too, is of some importance, inasmuch as tilting the animal into a head downward posture increases the diffusion of the drug. A greater fall of blood pressure occurred in the cases in which epinephrin was used in connection with tropacocain or novocain. Measures taken to raise the fallen blood pressure were of little value. It was easy to restore the pressure to normal, but the normal level could be maintained for only a few minutes.

It should be distinctly understood that these findings and conclusions represent the outcome of animal experimentation alone. They must be regarded as furnishing the key to the explanation of the most serious symptom attending spinal anesthesia, namely, the occasional serious fall of arterial pressure. Such information is the indispensable prerequisite to any rational progress in the application of the method in surgical practice. The experiments teach that spinal anesthesia can be successful only when the afferent paths are paralyzed, without at the same time paralyzing enough splanchnic cells or splanchnic root fibers to lower the blood pressure to a degree that may threaten the continued activity of the centers situated in the cervical cord and the spinal bulb.

Current Comment

"MAY WE COUNT ON YOUR ASSISTANCE?"

In the Propaganda Department this week, we print an editorial on advertising copied from the *New York State Journal of Medicine*. The conclusion is couched in strong language — but not a whit too strong:

> "When an exploiter places on the market a nostrum of no intrinsic value (excepting the bottle and cork) for which he claims virtues which it does not possess . . . he robs the purchaser of his money and health, thereby becoming a thief of the most despicable order. Any medical journal printing the fraudulent claims contained in the advertisements of the nostrums condemned by the Council on Pharmacy and Chemistry is an accessory to this act of thievery and the subscriber to such journals voluntarily assumes the position of an accomplice."

An appreciation of the subscriber's responsibility, emphasized in the editorial just quoted, may have prompted a Brooklyn physician to write us, "Cast your eye over the enclosed advertisements [from the *Therapeutic Gazette*] and then wonder at the nerve in asking subscriptions from the profession." Almost the same mail brought us, from another New York physician, a similar protest accompanied by advertisements from the New York *Medical Record*, these differing from those in the *Therapeutic Gazette* in degree but not in kind. Still another New York physician sent a collection of advertisements from the *New York Medical Journal*. Some of the advertisements sent us are of the rankest frauds, neither better nor worse than the fraudulent "patent medicine" advertisements appearing in lay periodicals — in fact, some are of "patent medicines" which many of the better lay magazines will not admit to their advertising pages. We hope that our correspondents have expressed their views on the subject to the publishers of the respective journals; nothing will so speedily bring about reform as determined and practical protest from the profession. One of the advertisements enclosed by a correspondent is pertinent here: "May we count on your assistance?" ingenuously inquires the Berlin Laboratory, Ltd., and with cool effrontery continues: "We are telling the layman about Intesti-Fermin. . . . May we count on your assistance in spreading this message to everyone. . . ?" Now who and what, doctor, may "count on your assistance?" Is it the quack and the nostrum manufacturer? Do you want to be an accomplice in what the *New York State Journal of Medicine* terms an "act of thievery"? Do you wish to assist in the promotion of Bell-Ans, Sal Hepatica, Campho-Phenique, Angier's Emulsion, Bromidia, Tongaline, Sanatogen, Sanmetto, Kutnow's Powder, Phenalgin, Micajah's Wafers, Ammonol, Chionia, Formamint, Anedemin, Neurosine, Pasadyne, etc.? If so — lend your support to the medical journals that advertise them. If, however, it is the public — your own patients — that may "count on your assistance," then your course is equally clear: refuse to accept from the mail, subscribe for, contribute to, or in any way countenance the journals that help to keep alive quackery and fraud — and *let the publishers know why!* The result will soon be evident. Do not, however, stop with this negative measure; it is equally important to sustain those journals which, without the backing of professional organization, have cleaned up their advertising pages and freed themselves from the blighting influence of the nostrum evil. If, through inertia and inattention, you permit your mail box and library table to become littered with the unclean swarm of nostrum-purveying journals, clean house. Then help support as many as you can afford of the unofficial publications that are making a creditable stand for decency in advertising. If the medical profession as a whole will manifest its opinion and desires in an unmistakable and practical way, an uplift in medical journalism will speedily be accomplished. Then and not till then can we consistently appeal to lay magazines and newspapers to stop promoting frauds in their advertising pages.

THE PUBLIC IS WAKING UP

A week or two ago we reprinted an editorial from the New York *Sun* on "The Newspaper Press as an Educator in Medicine." The editorial contains one paragraph which is peculiarly appropriate in connection with the comment given above. Here it is:

> "The *Sun* has endeavored to impress upon its readers the fallacy, if not the danger, of accepting prescriptions from doctors who, too indolent or unscientific to think out their own prescriptions, write for 'Kill or Kurem's' Hydrated Phosphate Compound, or C. D. & X. Company's 'Diostenin' or 'Professor Chadelle's Cresolated Compound,' the composi-

> tion of which they either do not know at all or accept from the manufacturers. The chief aim of the latter naturally is to popularize these preparations by leaving samples at the doctor's office or offering them in generous quantities for the mere cost of a postal card. This injustice and danger to the lay patient will never be removed, because the medical journals with but a very small exception advertise these preparations, the value and uses of which the manufacturers, with the most brazen effrontery, offer to teach the doctor who will listen."

How many times The Journal has said the same thing. It is encouraging to see that the newspapers are helping to reform the medical profession in this regard. When the average layman wakes up to the fact that his doctor is prescribing a "patent medicine" — for the average layman will not be able to distinguish between many of the so-called "ethical proprietaries" and the common, every-day "patent medicine," any more than we are able to do so — he will either go to a doctor who will give him the benefit of scientific training and individual thought, or he will go to the druggist and purchase his own medicine and read for himself what the manufacturer has to say regarding it.

ASEPSIS AND THE DISH TOWEL

Among the low-priced restaurants and lunch rooms which are numbered by hundreds in our large cities, there is one (it is but a type—there are dozens like it) whose exterior of white brick and plate glass is as sparkling and bright as a newly frosted cake. Within, an expanse of white enamel, resplendent metal and spotless linen proclaims a devotion to cleanliness rivaled only by the surgical ward in a hospital. The waitresses are as neat and trim as uniformed nurses. In this stainless temple of alimentation one of the immaculate priestesses has been seen to pick up a glass just used by a departing guest, polish it with the dish towel at her belt, and calmly replace it on the table to be used by the next patron! One might instance even more horrifying infringements on prandial decency in more pretentious establishments; one might expatiate on the possible dangers of infection from such practices. The establishments do not lose custom thereby, probably because the public, while vaguely impressed with the beautiful ideal of asepsis or perfect cleanliness, has a pathetically inadequate idea of what it means. It is therefore encouraging to read the following, under the heading "The Mischievous Wiping Cloth," in the November issue of the *Journal of Home Economics*:

> The dish towel, even the genteel barred variety, called a tea towel, is in bad repute. Ever since men began to look through the microscope and think in terms of the microscope its fate has been sealed. Only when freshly washed and boiled and used in clean hands to wipe the rims of already scalded and drained dishes is it to be admitted into a modern kitchen. Used in dirty hands till grimy, carried on the arm of a waiter and used to polish a plate or wipe up a table, it belongs to the dark ages, hygienically speaking. In dish washing the household should more and more approach the practice of the laboratory where glassware and porcelain are washed, rinsed in boiling water and placed to drain. No cloth, no matter how well known its antecedents, is allowed to touch them, for they are now absolutely clean and must remain clean.

Perhaps, if such ideas as these are becoming current, we may hope for the day when Bridget will invariably sterilize her dish cloth and scorn the dish towel for her aseptic dishes, while "neat-handed Phillis" will always complete her coiffure beyond all revision before coming to serve our food. At any rate, one may always hope.

THE "CHEMICAL" WAR

The present war has been frequently called — not inaptly — a "chemical war" because so many of the destructive energies at work are due to modern advances in chemistry, particularly in our knowledge of the nitrogen compounds.[1] This designation has seemed, perhaps, a slur on the science of chemistry. It has even been hinted that chemistry is more harmful than beneficial, and that its development represents a serious detriment to mankind. In an address presented at the meeting of the American Chemical Society at Seattle, Dr. L. H. Baekeland[2] discusses some of these imputations. This is by no means the first "chemical" war. The art of killing and robbing became chemical the day gunpowder was invented, how long ago we are not quite sure; but it is certainly over 1,000 years ago and perhaps nearer 2,000 years ago. Napoleon, over 100 years ago, was probably the first to recognize that chemistry and the related sciences might be used to great advantage in giving him decided advantages over his enemies. Incidentally he thus helped to lay the foundation for some important branches of chemical industry. It was not very long, however, before his enemies learned the lessons of chemistry, and he is reported to have stated that "the dogs have learned something from us." The perversion of chemistry to military uses has been only a side issue. Some of the most important advances in military methods have originated in some of the most beneficent steps in progress made by chemistry. Dr. Baekeland insists emphatically that it is not fair to reproach chemistry with "the fact that nitrocellulose, of which the first application was to heal wounds and to advance the art of photography, was stolen away from these ultrapacific and highly laudable purposes for making smokeless powder and for loading torpedoes." Nor is it fair to blame the chemist for the fact that phenol, which in Lister's hands revolutionized surgery, was turned from a blessing to humanity into a fearful explosive after it had been discovered that nitration changes it into picric acid. Curiously enough, many of those who have been engaged in diverting or perverting chemical compounds from usefulness in peace to the greatest destructiveness of war have been convinced that this very destructiveness from its awful character would produce an inevitable reaction which would guarantee peace. Alfred Nobel, the founder of the world peace prize, was a manufacturer of dynamite and made a fortune in high explosives. He fondly hoped that these high explosives would make war so destructive as to put an end to it forever. The old Romans had a maxim that from the abuse of a thing no argument was valid against the use of it. Chemistry has been an immense boon to the human race, even though at times its misuse has led to some of the worst calamities of human history.

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[1] The Artificial Fixation of Atmospheric Nitrogen, editorial, The Journal A. M. A., Sept. 25, 1915, p. 1112.

[2] Baekeland, L. H.: Applied Chemistry, Science, Oct. 22, 1915, p. 547.

THE RÔLE OF THE THYROID IN IMMUNITY

A number of observations have been made in order to determine what rôle, if any, the thyroid plays in immunity. Fassin recorded a diminution in the hemolytic and bacteriolytic properties of the blood after thyroidectomy, and Marbé found that the opsonic and phagocytic powers suffer, while Frouin declared that in dogs there was no loss of antitoxin, although the alexin was diminished. Lerda and Diez found that guinea-pigs are about as resistant to tetanus toxin without the thyroid as with it. Fjeldstad did not observe any interference with the formation of typhoid agglutinins after thyroidectomy in guinea-pigs. Most recently Launoy and Levy-Bruhl[1] have studied the problem in question, using an animal that heretofore has not been made the subject of experiments in this particular direction. These investigators were unable to make out that the removal of the thyroid in the chicken had any effect whatever on the course of a spirochetal infection (spirochetosis gallinarum). In view of the part played by the thyroid in maintaining the health of the body, it would not be surprising if disturbances of the function of this gland should be found to favor the development of infection, if not by direct interference with the formation of antibodies, then in some more or less indirect manner, such as disturbances of the functions of the leukocytes. As shown by this review of experimental work, the results obtained are not in agreement—a circumstance which is not so remarkable when we consider the variety of animals and methods employed. Much more work is required before the question as to the exact rôle of the thyroid in the resistance to infection will be settled. Under any circumstances the results obtained so far do not warrant the direct association of the thyroid with the production of antibodies.

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[1] Launoy and Levy-Bruhl: Ann. de l'Inst. Pasteur, 1915, xxix, 213.

State Control of Sewerage Systems.—The Maryland act of 1914 empowers the State Board of Health to order local authorities to install public systems of water supply, sewerage or refuse disposal in any municipal division of the state whenever the absence or incompleteness of such systems was sufficiently prejudicial to the health or comfort of the community. The local authorities might if they deemed any such order unlawful, unreasonable or unnecessary, bring an action in the courts to set aside the order. In October, 1914, the State Board of Health ordered the county commissioners of Baltimore County to install a sewerage system in a specified area. The commissioners sought in the courts to have the order set aside. They attacked the constitutionality of the law, but did not allege that the order was unreasonable. The supreme court of the state held that the sections of the act attacked were constitutional, but sent the case back to the circuit court to have determined the reasonableness of the order.

Medical News

(Physicians will confer a favor by sending for this department items of news of more or less general interest; such as relate to society activities, new hospitals, education, public health, etc.)

DISTRICT OF COLUMBIA

Home from Serbia.—Dr. Louise Taylor Jones, who has been serving in Serbia with the Red Cross, landed in Boston, October 21.

Measures for Health.—The Public Health Committee of the Board of Trade, in its annual report, has made health recommendations as follows: an appropriation to permit the erection of the proposed municipal hospital; the establishment of dental clinics in connection with the work at all local hospitals; improvement of ventilation in street cars; the establishment of an institution for idiotic, imbecile and feebleminded children; legislation for voluntary commitment for the Government Hospital for the Insane; the provision of a medical psychologist for every reformatory in the District; the erection of public baths in the various schools of the city; the establishment of a hospital for inebriates; the appointment of additional inspectors, the provision of increased laboratory facilities in the health department, and the erection of additional underground public comfort stations.

ILLINOIS

Personal.—Dr. Emmett A. Garrett has been appointed health commissioner of Peoria to succeed Dr. Edward Hasson.——Dr. J. W. Allison, Essex, who was operated on October 29 at Rochester, Minn., for the removal of gallstones, is reported to be doing well.——Dr. C. St. Clair Drake, secretary of the State Board of Health, Springfield, has returned from a trip to the Pacific coast.——Dr. Robert C. Bourland, Rockford, is convalescing from an attack of diphtheria.——Dr. Harrison R. Rogers, Rockford, was operated on for appendicitis in the Presbyterian Hospital, Chicago, October 30, and is said to be doing well.——Dr. William G. Bechtold, Breeze, who has been under treatment for tetanus in St. Elizabeth's Hospital, Carlyle, is reported to be improving.——Dr. James A. Kleinsmid, Aledo, who has been seriously ill as the result of an automobile accident, early last month, is now convalescent.——Dr. Barker Althunian, Joliet, has sailed for Europe, November 3, to work with the Russian Red Cross.

Chicago

Correction.—Dr. Oscar Dodd has been elected president of the Illinois Charitable Eye and Ear Infirmary Alumni Association, and not the Illinois Charitable Eye and Ear Infirmary as erroneously stated in the issue of October 30.

Meeting of Gynecologists.—At the thirty-seventh annual meeting and dinner of the Chicago Gynecological Society October 15, the following officers were elected: president, Dr. Channing W. Barrett; vice presidents, Drs. Franklin H. Martin and Mark T. Goldstine; secretary, Dr. N. Sproate Heaney; treasurer, Dr. Charles B. Reed; editor, Dr. W. A. Newman Dorland, and pathologist, Dr. Arthur H. Curtis.

To Prosecute Quacks.—Thomas S. Hogan of Chicago has been appointed special state's attorney in Cook County to handle violations of the medical practice act prosecuted by the state of Illinois. Mr. Hogan held the appointment of official counsel to the State Board of Health until the position was abolished by a decision of the supreme court. The court decision which in effect abolished the position held by Mr. Hogan with the state board, placed in jeopardy all pending prosecutions against quacks. The appointment had the approval of Governor Dunne.

Institute of Medicine Organized.—The Institute of Medicine of Chicago, the purpose of which is stated to be the encouragement of the advancement of medical science, was organized formally at a dinner at the Hotel La Salle, November 5, which was attended by 150 charter members of the organization. The officers elected were as follows: president, Dr. William E. Quine; vice president, Dr. Ludvig Hektoen; secretary, Dr. John G. Wilson; treasurer, Dr. J. A. Clapp; and board of governors, Dr. Frank Billings, chairman, William Allen Pusey, E. Fletcher Ingals, and William

H. Wilder. The objects of the organization are similar to those of the College of Physicians of Philadelphia, the Academy of Medicine of New York City, the Boston Medical Library, etc. It will conflict with no other medical organization. One of the immediate objects will be the securing of a permanent home for the medical profession of Chicago and vicinity.

INDIANA

Pure Food Violators.—A new policy has been adopted by H. E. Barnard, state food and drug commissioner, who declares that any saloon that violates the pure food law of Indiana and refuses to abide by the orders of the pure food bureau will be closed up the same as a restaurant that refuses to obey the law.

Mural Decorations for Hospital.—The mural decorations for the new Burdsal wing of the City Hospital, Indianapolis, have just been completed by William E. Scott, a colored artist. The work has required many months and is regarded as the most successful which the artist has done in this line. The subjects for the women's ward were "The Four Seasons" and "Nations Coming to Light." For the obstetrical ward Mr. Scott chose the subject of the life of Christ. Three hundred figures were used on twenty-two panels, varying in width from five to forty feet.

The Dispensary and University Trouble.—For several years the board of health of Indianapolis has contracted with the School of Medicine, Indiana University, so that there would be but one free dispensary in Indianapolis, in lace of the former City Dispensary and the Bobbs Disensary at the college. The board of health, however, eserved to itself the right to conduct and supervise this oint dispensary and also the power to discharge all mployees and officers. The board of health paid the Medial College $915 a month for its share of the expenses to e dispensary, the college paying the balance, which mounted to nearly $300 per month. Various breaches of e contract recently, although the contract has but two ore months to run, have caused the board of health to disontinue its support to the Medical College and to refuse o admit the medical students to the City Hospital. A new ity dispensary has been opened at the City Hospital and he staff, officers and employees of the previous joint disensary are all taken care of in the new dispensary. At he present time the only clinical facilities open to the tudents of the Medical College are those at the Long Hosital, which has very few patients compared to the City Hospital. A mass meeting of the students was held Novemer 5, to ascertain what the faculty intends to do in regard o furnishing them with clinics. Nothing definite has been done concerning the solution of this problem.

IOWA

Branch Laboratories Established.—Branch laboratories of the State Bacteriologic Laboratory have been established at Davenport and Waterloo. The work of these branches will be superintended by Dr. Henry Albert of the University of Iowa, Iowa City.

Pathological Laboratory Incorporated.—Articles of incorporation of the Davenport Pathological Laboratory were filed with the Scott County recorder, November 2. The organization is not for profit and the officers are as follows: president, Dr. Henry U. Braunlich; secretary, Dr. William A. Stoecks, and treasurer, Dr. Anthony P. Donohoe.

Personal.—Dr. James M. Brooks, Newell, has been made a life member of the Buena Vista County Medical Society. ——Dr. Hobart E. Martin, Clinton, who was operated on for hernia at Mercy Hospital, October 21, is reported to be doing well.——Dr. Edward J. Van Metre, Tipton, was seriously injured by the overturning of the automobile in which he was riding, near Tipton, October 9. His collar bone and three ribs were fractured.

MARYLAND

Medical Societies Merge.—The medical societies of the University of Maryland School of Medicine and the College of Physicians and Surgeons were merged at a special meeting of a committee appointed by the combined faculties, recently. Since the combination of the two schools of medicine has become permanent, it was decided that a single medical society representing both schools would bring about the best results. Dr. Albert H. Carroll was elected chairman of the new society, Dr. Elmer B. Freeman, vice chairman, and Dr. Alexius McGlannan, secretary.

Personal.—Dr. Karl H. Van Norman, first assistant superintendent of Johns Hopkins Hospital, has resigned to accept a captaincy in a Canadian regiment, which is soon expected to be assigned to active duty.——Dr. William B. Hunter, Baltimore, superintendent of Kernan's Hospital and Industrial School for Crippled Children, has resigned, to take up private practice in Wilmington, N. C.——Dr. John D. Fiske, Baltimore, who is employed by the Atlantic Transport Company, while climbing a ladder up the side of a ship, slipped and fell 20 feet, breaking his shoulder.——Dr. Leonard G. Rowntree, assistant head of the department of medicine of Johns Hopkins University, has been appointed professor of medicine and chief of the department in the University of Minnesota, succeeding Dr. Charles Lyman Greene, St. Paul, resigned.——Dr. C. Hampson Jones assumed his duties as chief of the bureau of communicable diseases of the State Department of Health, November 4.——Dr. William Travis Howard, Jr., became assistant commissioner of health of Baltimore, November 4.——Drs. Lewis C. Spencer and Martillus H. Todd of the staff of American surgeons at the Pau Base Hospital, France, returned to Baltimore, October 26. ——Dr. Marshall B. West, Catonsville, is reported to be ill with septicemia.

MINNESOTA

New Bi-County Sanatorium.—On October 18, work was commenced on the Clay-Becker County Tuberculosis Sanatorium at Sand Beach Lake. The cost of the construction of the sanatorium will be about $45,000 and it is to be completed about July 1, 1916. The building will be of brick and reenforced concrete, three stories in height and will accommodate about twenty-five patients.

Personal.—Dr. James F. Hammond, St. Paul, who has been in service on the Gallipoli Peninsula, returned to London in charge of wounded soldiers, September 23, and after a short stay, returned to the Mediterranean.——Dr. William J. Mayo and party ended their cruise on Dr. Mayo's steamer *Oronoco*, at Louisville, October 23, and returned to Rochester by rail. The trip included the Mississippi River from Winona, Minn., to Cairo, Ill., the Ohio and Cumberland rivers as far as Rome, Tenn., and then the Ohio River to Louisville, Ky., where the cruise ended.——Dr. William J. Mayo, Rochester, has been elected president of the Good Roads Organization for Olmstead County which was organized recently.——Dr. Delbert F. Dumas, Cass Lake, has sold the Cass Lake Hospital to Dr. Samuel R. Fraker, Chelsea, Iowa.——Dr. James A. Rippert, Chisholm, lectured before the senior class of the University of Minnesota Medical School, October 27, on "Medical Supervision in Public Schools."

Whole-Time Men in Health Service.—A report of the public health committee of the Minnesota Public Health Association contained the following comment on the reorganization of the health service in Minneapolis, St. Paul and Duluth: Minneapolis is talking of employing several whole-time men and having a complete reorganization of the department, to be effective about Jan. 1, 1916. It is hoped that the talk will materialize into something definite. Outside of their visiting nurse service, and in Duluth the milk inspecting service, the health departments of the three large cities of the state have nothing worth commenting upon. A rating of efficiency of organization by the federal department would be disgraceful to the state of Minnesota. In spite of a lack of organization, poor facilities and inadequate pay, the men in charge of the departments in the three cities are doing excellent work. In all three, Minneapolis, St. Paul and Duluth there should be a complete reorganization with the employment of whole-time men trained in public health work.

MISSISSIPPI

State Board of Health Wants Sanatorium.—The State Board of Health has appointed a committee composed of Drs. Waller S. Leathers, University; L. Wade Glass, Lyon; Harvey F. Garrison, Seminary; James J. Haralson, Forest, and Daniel J. Williams, Gulfport, to draft a bill to be presented to the next legislature, asking for the creation of a state sanatorium for tuberculosis.

Health Day.—Pursuant to a proclamation by Governor Brewer, dated September 14, October 29 was set apart as Health Day at the request of the state educational department. Programs were carried out on that day in the public schools and a six-months' campaign of education prepared by the State Board of Health and the department of education was inaugurated.

MONTANA

Medical Inspection.—The school board at Bozeman has accepted the proposition of the Gallatin County Medical Society to establish medical inspection in one school in Bozeman. The society by resolution agreed to furnish medical inspection for one of the smaller schools of the city and to give detailed report of such inspection to the board of trustees without making any charges. The Hawthorne School has been selected. Bozeman has not heretofore had medical inspection of schoolchildren.

Personal.—Dr. John W. Frizzell, Great Falls, fractured his leg while cranking his automobile, October 18, and also received internal injuries when the car started, crushing him between the car and the garage wall. He is reported to be in a critical condition at the Deaconess Hospital, Great Falls.——Dr. Charles F. Jump, Bozeman, has returned after postgraduate work in Chicago.——Dr. Willoughby G. Dye, Deer Lodge, has gone to Boston for postgraduate work in Harvard Medical School.——Dr. William L. Renick and Dr. Thomas C. Witherspoon of Butte have recently purchased the ranch of the late Dr. Robert P. R. Gordon, Great Falls, on the Swan River, in the vicinity of Swan Lake. The ranch will be used as a summer residence.——Dr. Herbert H. Judd of Bozeman addressed the Woman's Club at Livingston, November 3, on medical inspection of schoolchildren.

Medical Attention Under Compensation Act.—The attorney-general has given the following opinion to the State Accident Industrial Board regarding medical attention under the provisions of the workmen's compensation act:

> "Whenever an accident occurs and no loss of time results to the injured employe, and the nature of the resulting injury is such as to make it reasonably necessary to secure medical service, attention or medicines, or to give care, attention or treatment to the injured employe, the employer, insurer or industrial accident fund, as the case may be, depending upon the plan adopted by the employer, is liable for the reasonable and necessary expenses incurred for such medical services, attention or medicines, not exceeding in any one case the sum of $50, and not extending over a period of more than two weeks immediately following the accident."

NEBRASKA

Personal.—Dr. John A. Waggener, Humboldt, has been appointed physician to the Soldiers' and Sailors' Home, Grand Island.——Dr. Volney D. Douglas, Crab Orchard, was severely injured by an axe wound of the knee, October 10.——Dr. Adrian F. Burkard, Omaha, has moved to Soquel, Calif.——Dr. William R. Peters, Stanton, while returning from a professional call, recently, was seriously injured by the overturning of his automobile.

Contagious Disease Hospital for Lincoln.—Following a visit to the Isolation Hospital of Lincoln by a special committee from the Lancaster County Medical Society, the committee has recommended that another hospital for the treatment of contagious diseases be built. Under the present system there is no provision for the care of patients suffering with diphtheria and scarlet fever and the isolation hospital is used chiefly for smallpox. The plan of the committee is to erect a small cottage some distance from the isolation hospital, for the treatment of other communicable diseases.

NEW YORK

Vassar Alumnae Ask Health Work.—Twelve young women, members of the Buffalo Chapter of the Vassar College Alumnae Association, have requested the deputy health commissioner to assign them to work in connection with the extension of the health center movement.

Health Centers for Buffalo.—Health Commissioner Fronczak announces that he intends to designate Dr. Nelson G. Russell as chief consulting physician for Buffalo. He has also decided to inaugurate three additional health centers, one at 1067 Grant Street, one at 591 William Street and a third on the grounds of the Municipal Hospital at 770 E. Ferry Street. The entire scheme is merely a rearrangement and readjustment of the territory now covered by the staff of the health department. The following physicians have been appointed by Dr. Russell to take charge of the tuberculosis work: Dr. James H. Donnelly, chief examiner; Dr. David Cohn, examiner at the Municipal Hospital health center; Dr. George J. Eckel, examiner at the East Buffalo center, and Dr. Harry Mead, examiner at the Black Rock center.

New York City

Home for Cancer Patients.—The new House of Calvary on Macomb's Road in the Bronx, erected at a cost of $120,000, has been formally opened by Cardinal Farley. This home for the cancerous poor was founded many years ago in Perry Street by Adrian Iselin, and was later moved to upper Seventh Avenue.

Personal.—Dr. and Mrs. W. Seaman Bainbridge and Dr. John Van der Poel have returned from Europe.——Dr. Clarence A. McWilliams sailed for France, November 3, to take charge of the French Military Hospital at Passy.——Dr. W. J. Maloney, who was wounded by shrapnel while serving with the Red Cross at the Dardanelles, reached New York on the *St. Louis*, October 31.

Violations of the Drug Law.—A report just made by District Attorney Wilmot shows that since the first of the year there have been 700 convictions in the court of special sessions of persons selling and possessing drugs. This number, however, does not include the many thousand addicts who have been committed by magistrates to hospitals for treatment. Among those convicted there have been fifty druggists and a number of physicians. The report states that the sale of habit-forming drugs has been greatly decreased because of the crusade of the district attorney's office.

Health Department Again Warns Traction Companies.—Dr. Haven Emerson, who has just succeeded Dr. Sigismund Goldwater as health commissioner of New York City, has declared his intention of carrying out Dr. Goldwater's policies. One of his first steps along this line has been to send a notice to the car companies that the order issued by Dr. Goldwater last March calling attention to that section of the city charter which forbids overcrowding is still in effect and that inspectors will begin to ride on the cars shortly and count passengers.

NORTH CAROLINA

Hospital News.—Mrs. Edith Vanderbilt, widow, and W. K. Vanderbilt, executor, of the late George W. Vanderbilt, have executed a deed to the Clarence Barker Memorial Hospital on the site now occupied by the Biltmore Hospital and Dispensary. The deed proposes that the hospital be used continuously for hospital and dispensary purposes for thirty years and that otherwise it shall revert to the estate of the late George W. Vanderbilt.——St. Luke's Hospital, New Bern, has been completed and was formally opened November 1 for public inspection. On the next day the hospital was ready to receive patients.

Personal.—Dr. Herbert H. Purinton, Durham, has been appointed by the British government, health officer to the Leeward Islands, British West Indies, and has left for his new post of duty.——Dr. C. Banks McNairy, superintendent of the State School for Feebleminded, Kinston, was severely injured in an encounter with an enraged bull on the farm attached to the school.——Drs. Watson S. Rankin, Raleigh, secretary of the State Board of Health, and Thomas M. Jordan, Raleigh, have returned after a tour of school inspection systems in eastern cities. Dr. Jordan started on the school inspection work for the State Board of Health, November 1.——Dr. R. H. Crawford, Rock Hill, has returned from service with the American Red Cross in Germany and Austria.

OHIO

Tuberculosis Hospital Donated.—Peter Kuntz, Dayton, has purchased a site for the proposed tuberculosis hospital which he will erect for the use of the people of Dayton at a cost of $500,000. The site selected is on the highlands west of the city.

Western Reserve News.—President Charles F. Thwing of Western Reserve University in his annual report renews a recommendation that a fund be established to take the name of the late Dr. Hunter H. Powell, a distinguished member of the faculty of the school of medicine. To the $40,000 which is expected will be set aside for this fund, President Thwing said that $10,000 may fittingly be added.——He also asks that a special fund be set aside from the $1,000,000 donation to the school of medicine under the name of Dr. Dudley P. Allen, the income of this fund to be used in research in surgery.——The delay in rebuilding the Western Reserve School of Medicine and Lakeside Hospital is contributed to by the "commercial and industrial depressions and uncertainties caused by the European War."

Personal.—Dr. Charles L. Files, Van Wert, who has succeeded Dr. John R. Johnson as superintendent of the District Tuberculosis Hospital, Lima, assumed the duties of his new position, November 1.——At the quarterly meeting of the council of the State Medical Association held in Columbus, October 25, Mr. George V. Sheridan was unanimously elected executive secretary of the organization.——Dr. Joseph G. Fudge, Spring Valley, was seriously burned by the explosion of an acetylene tank, October 23.——Dr. James G. Cullen, Toledo, is reported to be critically ill.——Dr. John N. Calhoun, Lisbon, is reported to be ill with nephritis in Lakeside Hospital, Cleveland.——Dr. Edwin A. Hamilton, Columbus, has returned after four months' Red Cross service in Gleitwitz, Germany.——Dr. Philip D. Wilson, Columbus, has returned after military hospital service in France.——Dr. Charles H. Ross, Alliance, was knocked down by a motorcycle, October 11, fracturing his right leg below the knee.——Dr. Cassius M. Shepard, Columbus, who was operated on for appendicitis, October 2, has made a satisfactory recovery.——Dr. Howard W. H. Nelles has been elected chief of staff and Dr. Joseph J. Sweeney, secretary of the Lucas County Hospital, Toledo.——Dr. Charles G. Souder, has been appointed superintendent of the Lucas County Tuberculosis Hospital, Toledo.

PENNSYLVANIA

Cornerstone Laid.—The cornerstone of the new Children's Building of the Tuberculosis League Hospital, Pittsburgh, was laid by Dr. Samuel G. Dixon, commissioner of health of Pennsylvania, October 29.

State Hospital Officials Meet.—At a meeting held in Philadelphia the week of October 29 of the trustees and superintendents of state and incorporated hospitals for the insane and feebleminded of Pennsylvania, the following officers were elected: president, William M. Donaldson, Harrisburg; vice president, Dr. Harry W. Mitchell, Warren; and secretary, Dr. Henry I. Klopp, Rittersville.

Personal.—Dr. Benjamin Frye, Sharpsville, who has been seriously ill with diphtheria, is reported to be much improved.——Dr. J. Burket Howe, Erie, underwent an operation October 18 and is reported to be doing well.——Dr. Clinton T. Saylor, Rockwood, who was operated on for appendicitis at a hospital in Johnstown recently, is convalescent and will soon resume practice.——Dr. Fremont W. Frankhouser, Reading, who has been incapacitated for some time on account of an automobile accident and then by reason of an operation on the eyes, has recovered and resumed practice.——Dr. Michael George Dewey, Girardville, was seriously injured in an automobile accident, October 12.——Dr. Theresa G. Breene Baum, Oil City, is reported to be critically ill.——Dr. Francis E. DeLong, Bayers, was seriously injured, October 2, by being thrown from his buggy in a runaway accident.

Philadelphia

Personal.—Dr. Frank R. Starkey has returned from a five months' tour of North America and has resumed practice.——Dr. Ray Parker of the Philadelphia Hospital for the Insane has resigned to accept an appointment as first assistant at the State Hospital for the Chronic Insane, Wernersville, where she will succeed Dr. Robert M. Alexander, resigned to enter private practice in Reading, Pa.——Dr. Horatio Connell Jones underwent an operation in the Samaritan Hospital, October 29.——Dr. Bertha Whaland and Dr. Ann T. Gibson have been appointed assistant medical school inspectors by Director Ziegler.

Hospital Wins Suit.—Judge Gummey in the Orphans Court, November 3, awarded to the Episcopal Hospital a bequest of James J. Hope for the establishment of a ward in a hospital devoted to the treatment of contagious diseases. The bequest was frequently referred to as a fifty-thousand dollar legacy, but, according to the adjudication, it amounts to $18,924.90. In January the legacy was awarded to the Philadelphia Hospital for the treatment of contagious diseases and was later set aside and all hospitals invited to submit evidence. Upon the testimony of trustees of the Episcopal Hospital that they intended to alter their buildings for the purpose of treating contagious diseases, the new award was made.

VIRGINIA

Hospital Notes.—The contract between the Abingdon Hospital and the Board of Supervisors of Washington County has been renewed for one year.——The William A. Crowder Memorial Hospital, Petersburg, was formally opened the first week in October.

Washington County Physicians Organize.—Physicians of Washington County met at Bristol, October 22 and organized a medical society with an initial membership of fourteen and the following officers were elected: president, Dr. Andrew F. Horne, Glade Spring; vice presidents, Drs. D. L. Kingsoliver, Green Springs; William L. Gannaway, Abingdon, and W. H. Teeter, Barytes; and secretary, Dr. Paul Kernan, Bristol.

Tri-County Medical Society Organized.—Physicians of King George, Stafford and Spotsylvania counties and the city of Fredericksburg met October 19 at Fredericksburg and organized the Tri-County Medical Society, electing the following officers: president, Dr. William A. Harris, Spotsylvania; vice presidents, Drs. Joseph N. Barney, Jr., Fredericksburg, and Henry W. Patton, Hemp, and secretary-treasurer, Dr. C. Mason Smith, Fredericksburg.

New State Society Officers.—At the forty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 26 to 29, the following officers were elected: president, Dr. Joseph A. White, Richmond; vice presidents, Drs. Marshall J. Payne, Staunton; Edward E. Feild, Norfolk, and Robert M. Wiley, Salem; treasurer, Dr. Mark W. Peyser, Richmond (reelected); secretary, Dr. Paulus A. Irving, Farmville (reelected); delegates to the American Medical Association, Drs. Southgate Leigh, Norfolk, and William E. Anderson, Farmville; Dr. Edwin L. Kendig, Victoria, councilor from the Fourth District; and Dr. John Staige Davis, University, councilor at large. Norfolk was selected as the next place of meeting.

Antituberculosis Work.—The executive secretary of the Virginia Antituberculosis Association in her annual report states that during the year sixty-five lectures were given in sixteen counties of the state. That in six counties, county societies have been formed and that at present sixteen active leagues or committees are at work in the state. Danville has opened a fresh-air school. The association received from the sale of Christmas seals, $3,886.——The Tuberculosis Sanatorium on Reservoir Hill, which is being erected by the Danville Antituberculosis Society and the city of Danville, is practically ready for occupation. At present there are two tuberculosis patients in the camp who have been occupying tents for several months and are showing great improvement.

CANADA

Personals.—Dr. Harold C. Sutton, Cooksville, Ont., has joined the Canadian Army Medical Corps.——Dr. R. W. Bruce Smith, Toronto, inspector of the provincial hospitals for the insane for Ontario, who has been ill since last spring, is now reported to be recovering rapidly.——Dr. J. Arthur Sutherland, who since his graduation from Trinity University in 1896, has been practicing in British Columbia and Fairbanks, Alaska, was in Toronto in October on his way to go into service with the French Army Medical Corps.——Lieut.-Col. Walter T. Connell, Kingston, Ont., on duty with Queen's Stationary Hospital in Egypt, has sailed for Canada.——Dr. Alfred W. Nixon, M. P. P., Georgetown, Ont., has volunteered for active service and has been accepted. He will leave shortly for England to join the R. A. M. C.——Dr. Vernon Lamb, St. Andrews, N. B., is at present attached to the Canadian Cavalry depot at Shorncliffe, England, having 1,500 men in his charge.——Dr. Thomas G. Brodie, University of Toronto, recently returned from England, after a summer with the University of Toronto Base Hospital.——Dr. Darius A. Coon, Elgin, Ont., has resigned as superintendent of the Kingston General Hospital and will enter private practice in that city. He has been succeeded by Dr. M. F. Coglan.——At Woodstock, Ont., November 5, the members of the medical profession of that city gathered at the residence of Dr. A. Beverley Welford to do honor to five of their confrères who had entered the army medical service. All were presented with wrist watches. Capts. Franklin S. Ruttan and Samuel M. McLay are at the front; Capts. David J. McKay, J. McKenzie Cochrane and Jim B. Jupp are in training.——Six doctors have been selected in Toronto to reinforce the Canadian Army Medical Corps. They are: Dr. G. A. Wallace, Bellevue Hospital, New York; Dr. Karl H. Van Norman, Baltimore; Dr. Roy H. Thomas, Toronto; Dr. Albert J. Fisher, New Liskeard; Dr. John Hunt, Sault Ste. Marie, Ont.; Dr. Reginald A. Mathews, Toronto.——Major Frederick Guest, R. A. M. C., St. Thomas, Ont., is home on short leave of absence necessitated by an accident. He will return to the Dardanelles in two months. There are no Canadian troops where he was stationed, at West Mudros on Lemnos, Greece.

GENERAL

Hospital Ship for Fishing Banks.—The Coast Guard Cutter *Androscoggin* has left the Charlestown Navy Yard for Gloucester, Mass., preparatory to a cruise to the Banks of Newfoundland and the coast of Nova Scotia where it will act as hospital ship for the fishing fleet.

Surgeons' Congress at Boston.—At the annual meeting of the Clinical Congress of Surgeons in Boston, the following officers were elected: president, Dr. Fred B. Lund, Boston; vice presidents, Drs. Jasper Halpenny, Winnipeg, Man., and Samuel M. D. Clark, New Orleans; general secretary, Dr. Franklin H. Martin, Chicago (reelected); and treasurer, Dr. Allen B. Kanavel, Chicago (reelected). Philadelphia was selected as the next place of meeting.

Vaccination Regulation Rescinded.—It is reported that Secretary of Commerce William C. Redfield has ruled that the provisions of the new seaman's act relative to vaccination within a period of five years before a certificate of competency will be issued to a seaman, need not be enforced. The seaman's law went into effect November 4, and the designated stations for physical examination of applicants have been crowded with seamen applying for certificates. The physical examination required by the law is a rigid one. The reason for Secretary Redfield's ruling has not been disclosed, so far as known.

Cancer Cultures.—To provide against contingencies that might be brought about by the Zeppelin raids on London, Dr. James A. Murray, director of the Imperial Cancer Research Fund, several weeks ago sent to the Columbia University laboratory in New York duplicates of all the cultures and specimens that have been developed in London through thirteen years of patient work by the fund. A recent Zeppelin raid narrowly missed causing the destruction of the laboratories in London. The specimens sent to New York were placed in charge of Dr. Francis Carter Wood, director of the Crocker Cancer Research Fund of Columbia University, and will remain there indefinitely unless those in London should be destroyed. The Crocker Fund and the Imperial Research Fund are in close communication and have exchanged scientists on occasion.

Seize Substitute Specifics.—Several shipments of worthless imitation drug products have been seized by the officials in charge of the enforcement of the Food and Drugs Act. A preparation put up in imitation of neosalvarsan is being distributed to drug stores in this manner. A sample labeled "Neosalvarsan," which was recently examined by the department, was found to be nothing more than salt colored with a coal tar dye, none of the genuine neosalvarsan whatever being present. The label on this product was an exact reproduction of the genuine imported neosalvarsan, or it was an original container refilled with the imitation articles. Other preparations peddled to druggists and purporting to be acetylsalicylic acid, or aspirin, have been seized by officials in charge of the enforcement of the Food and Drugs Act, because an analysis showed that the products were worthless imitations.

Metabolism Investigation Assistant Wanted.—The United States Civil Service Commission announces an open competitive examination for assistant in metabolism investigations, for men only, on December 8, at the usual places in the United States at which such examinations are held. From the eligible list certification will be made to fill the vacancies in this position at the United States Public Health Service for field duty at a salary of $1,500 a year. The prerequisites are, graduation after a four years' course at a university, college or medical school of recognized standing; at least six months' practical experience in work with the respiratory apparatus and the calorimeter; verification of statements as to education and experience, and age, below 45 on the day of examination. Application for those who take this examination is to be made to the United States Civil Service Commission, Washington, D. C., or the secretary of the local board.

Bequests and Donations.—The following bequests and donations have recently been announced:

Johns Hopkins University, $37,500, to be invested under the name of the Beal Memorial Fund, the income to be used at the discretion of the Board of Trustees; Eudowood Sanatorium, Towson, Md., $10,000, by the will of James M. Beal.

Kansas University School of Medicine, Lawrence, $30,000, by the will of Dr. Joseph L. Porter, Paola, Kan.

Columbia University for the Sloane Hospital for Women, New York, $50,000, by the will of William D. Sloane.

Columbia University, the residuary estate estimated at several million dollars, by the will of Emil F. Eno.

Germantown, Philadelphia, Hospital, $5,000, to endow a free bed in memory of George Wilson Harmer and Harry G. Hale Harmer; Children's Hospital, Pittsburgh, $2,500, to endow a free bed in memory of Elizabeth Hale Phillips and Hale Phillips; Allegany Hospital, Pittsburgh, $5,000, to endow a free bed in memory of Henry G. and Elizabeth Hale, these bequests to become operative upon the death of her two brothers, by the will of Mrs. Jane H. Harmer.

Presbyterian Hospital, Philadelphia, 10 per cent. of the residue of his estate by the will of Dr. DeBenneville J. Ludwig.

FOREIGN

Leprosy in Manila.—Twenty-three former inmates of the Culion Leper Colony were brought to Manila sometime ago to undergo a period of observation and thorough examination to determine whether the chaulmoogra oil treatment as administered at the colony had been effective in curing the leprosy with which they were affected. The three physicians under whose inspection they were placed, Drs. Johnston, Mercado and Ordonez, all agreed that there were no longer any indications of the disease present. The patients were allowed to go to their homes, but will be required to report every two or three weeks to their district health officers for the next two or three years. If there are any indications of a return of the disease, the patients will be returned to the leper colony.

Peking Hospital Opened.—Dr. Wallace Butterick, director of the China Medical Board, Dr. Simon Flexner of the Rockefeller Institute for Medical Research, New York, and Dr. William H. Welch, professor of pathology at Johns Hopkins University, Baltimore, were the guests of honor at the dedication of the new Sleeper-Davis Memorial Hospital, Peking, China. The new building is a five-story structure erected by the Methodist-Episcopal Church at a cost of $180,000 and has accommodation for 150 patients. The building is heated by steam, lighted by electricity, equipped with modern plumbing and provided with a diet kitchen. The patients are treated by American physicians who have Chinese assistants and are cared for by Chinese nurses, the head nurse being an American.

The Death of Sir Charles Tupper.—The Right Honorable Sir Charles Tupper, M.D., K.C.M.G., G.C.M.G., aged 94; Canadian physician and statesman; died in Bexley Hall, Kent, England, October 30. He was born at Aylesford, Nova Scotia, July 2, 1821, and obtained his doctorate degree in medicine from the University of Edinburgh in 1843. For twelve years Dr. Tupper practiced in Nova Scotia. He was then appointed as member from Cumberland County to the Nova Scotia Assembly, and in 1867 became prime minister of that province. In 1864 he did memorable work at the Quebec Conference for Confederation and also at the final Colonial Conference in London two years later. He declined a seat in the Canadian Cabinet in 1867 and also the chairmanship of the Intercolonial Railway Board in 1868. Two years later he was made a member of the Privy Council of the Dominion of Canada, and served as its president from 1870 to 1872, when he was appointed minister of inland revenue. In 1873 he became minister of customs, from 1878 to 1879 served as minister of public works and from 1879 to 1884 was minister of railways and canals. In 1884 he was made high commissioner for Canada in Great Britain and served for three years, and then after a lapse of a year in which he was minister of finance of the Dominion, he again returned to England as high commissioner and served until 1896. During this term of office he was one of her majesty's plenipotentiaries on the Fishery Commission at Washington in 1887-1888, and was also a plenipotentiary to negotiate the treaty between Canada and France in 1893. On Jan. 15, 1896, Sir Charles entered the Bowell Ministry as secretary of state and leader of the House of Commons, and from May 1 to July 8 of that year was prime minister of Canada, but with the overthrow of the ministry became leader of opposition in the House of Commons for four years. Honors were deservedly showered on Sir Charles Tupper. For fourteen consecutive terms he was a member of parliament for Cumberland County, N. S., and represented the county for thirty-one years. At one time he was president of the Canadian Medical Association. As minister of public works he created the department of railways and canals, and carried out the policy of the government in the enlargement of the Welland Canal, deepening of the St. Lawrence River, improvement of the Intercolonial Railway and the construction by a private company of the Canadian Pacific Railway. He was made a Commander of the Bath in 1867; K.C.M.G. in 1879, G.C.M.G. in 1886, a baronet in 1888 and an imperial privy councilor in 1908. Sir Charles Tupper was one of the notable figures in Canadian history and played a prominent part in the development of the Dominion from its establishment until his retirement from active life. He shared with the late Lord Strathcona the title of "Canada's Grand Old Man." While he will always be remembered as a political leader and a pioneer in the building of railroads and development of the Dominion, the medical profession of Canada esteemed him as one of the most prominent and able physicians the Dominion has produced.

LONDON LETTER

LONDON, Oct. 22, 1915.

The War

THE CARE OF THE WOUNDED

As pointed out before, the arrangements for the care of the wounded have been very well organized and probably have never been equaled in any previous war, unless by the Japanese. But there is the great difficulty that the wounded have often to lie for hours unaided because any attempt to help them at once draws the enemy's fire and they can be succored only when night gives protection from this danger. They are picked up as rapidly as the operations permit, carried to regimental aid posts by stretcher bearers, then through the field ambulance advance dressing stations, and then by motor ambulances to the casualty clearing stations. Here they remain until fit to proceed further or until operations of urgency are performed. They are then transferred by the hospital trains to the hospital bases. The work is performed with such celerity that as many as 450 patients have been transferred from ambulances to beds in the train in fifty-eight minutes. Whenever possible, patients are classified at the field ambulance headquarters, the most serious cases sent to the nearest casualty clearing station, and the less serious to the more distant. Use is also made of barge ambulances, which the canal system of France and Belgium has made available. Experiments with this novel method of transporting the wounded have proved so satisfactory that the tendency is to increase the number of barges. They offer the great advantage over motor cars or trains that there is absolutely no jolting. A new feature in the present war is the extent to which specialists of all kinds are employed in heir own work. Like all classes in the profession, they have joined the army in large numbers. Thus at several of the asualty clearing stations there are specialists in abdominal work, and as many as possible of soldiers with abdominal gunshot wounds are sent to these stations. Moreover, they do not reach the station in the usual indirect manner, but are ent straight in by a field ambulance when picked up. It has been proposed that men wounded in the abdomen should undergo operation practically where they fall, in mobile operating theaters. But this is rendered impossible by the fact that enemy aeroplane observers direct fire on every place where they see men collected.

THE AMERICAN RED CROSS IN ENGLAND

At Paignton in Devonshire a large Red Cross hospital was established by the American women in England and staffed by an American unit which came over in September, 1914, with a staff of six surgeons and twenty-four nurses to which were added an equal number of British and Australian nurses. Later Dr. Crumley of the Mayo Clinic joined as pathologist and bacteriologist. The hospital has been in charge of Dr. Howard Beal of the Medical Service of the United States Army. He has just returned to America, and before leaving was entertained at a farewell luncheon by Sir William Osler, who is consulting physician to the hospital. In proposing a toast, Sir William said that the American women in England had achieved a fine piece of organizing work. Sir Alfred Keogh, director general of the Army Medical Corps, bore testimony to the excellent work done by the American Red Cross at Paignton, and by the Harvard and other units in France. In the name of our Army Medical Corps he thanked Dr. Beal and the American women in England. Dr. Beal said that the hospital now possessed 250 beds, with twenty others in an isolation block. During the year they had treated 1,900 patients with only five deaths. Americans who, like himself, were of English ancestry, felt the call of the blood, and he was confident that if the British War Office wanted to widen the scope of its medical service, he could get a corps of Americans with British blood who would be delighted to come.

EXHIBITION OF FRACTURE APPARATUS AT THE ROYAL SOCIETY OF MEDICINE

Experience is considerably modifying our views of the treatment of wounds and other injuries. A large number of splints and other apparatus for the treatment of fractures have already been devised under the exigencies of active service. Under the auspices of the army medical authorities, an exhibition of apparatus was held at the Royal Society of Medicine, and was largely attended by physicians, most of whom were in khaki. In opening the exhibition, Sir Alfred Keogh, director general of the Army Medical Department, said that it was a step toward making scientific information common property. The surgeons on active service had made great progress. Nevertheless much difference of opinion as to the best methods of treatment of injuries and of the complications of wounds still existed; for instance, there was as yet no agreement as to how best to treat tetanus, as to whether antitoxin, if it were used, should be injected intravenously, subcutaneously or intrathecally, and as to the value of phenol (carbolic acid) and other methods of treatment. Whether the apparatus in the exhibition would be applicable to civil conditions was not the immediate question, but he felt confident that for military surgery a system of splinting fractures had been worked out which marked a permanent advance. The objects had been to allow the patients to make those spontaneous movements which would not be detrimental to the fracture, to insure freedom from pain during transport, and to provide ready access to the wounds, especially for irrigation, which was the rule of the day in France. Many most ingenious apparatus were exhibited.

PARIS LETTER

PARIS, Oct. 14, 1915.

The War

TREATMENT OF ABDOMINAL WOUNDS

Last June Dr. Quénu, professor at the surgical clinic of the Faculté de médecine de Paris, read before the Société de chirurgie de Paris a paper which I mentioned in a previous letter (THE JOURNAL, July 24, 1915, p. 348). At a recent session of the same society Quénu reported 153 observations by Drs. Petit, Charrier, Bichat, Pascalis, Pellot, Bouvier and Caudrelier of abdominal wounds, of which 110 were operated on, 6 by the Murphy operation and 104 by laparotomy.

Summing up these observations, one obtains a total of 96 penetrating wounds (60 of which were intestinal) with a mortality of 55 per cent. This percentage indicates the advantage of operation over nonoperative treatment, which gives a mortality of at least 67 per cent. It may be said, moreover, that laparotomy has won the day with respect to abdominal wounds of war. Every penetrating wound should be operated on. The diagnosis of penetration is sometimes difficult; it is based largely on a calculation of the course followed by the projectile, figures from the position of the orifices of entry and exit, or, in the case of a single orifice, of the position of the projectile as indicated by roentgenograms. Practically, however, this last resource is not always available, and every wound of the abdominal wall (or even of the adjacent regions) with but a single orifice may be held under suspicion. In cases of doubt, if circumstances permit, it is well to make an exploratory laparotomy.

What are the conditions which call for operation? One should not waver and hesitate on the pretext of shock. Shock is by no means a constant phenomenon; it is often absent in the first hours and it seems to result principally from hemorrhage. Delay can only favor loss of blood and peritoneal infection. It is therefore necessary to decide definitely at the outset on operation or abstention. Promptness of operation is one of the principal elements of success. To attain this promptness greater rapidity in the removal and transportation of the wounded is needed, or indeed the operative equipment might be brought to the patient, that is, an operating station might be installed as near as possible to the firing line.

As for postoperative treatment, it appears from the observations of Pascalis, Bouvier and Caudrelier that it is preferable to remove the patients a short distance within two or three days after operation rather than to await the critical period.

ORTHOPEDIC APPLIANCES FOR CRIPPLES

M. Gratien Candace, a deputy, has found that some manufacturers of orthopedic apparatus sell at from 125 to 150 francs (about $25 to $30) the same types of apparatus which others sell at 200 francs (about $40). He has therefore demanded that the government exercise control over orthopedic manufacturing establishments. The question is under discussion in the Chamber of Deputies. It appears that the chaotic conditions in the manufacture of apparatus are due to the lack of agreement as to types of apparatus. This lack necessitates a multiplicity of models and produces a variability in price. The undersecretary for the medical service called the head physicians of the orthopedic centers of Paris, Lyons, Montpellier and Bordeaux into conference Aug. 10, 1915, to consider means of improving the situation by hastening the production and controlling the manufacture of apparatus. It was agreed that it would be wise to seek a standard type of prothetic appliance for each kind of mutilation of the limbs; this would make it possible to establish a scale of prices that would apply uniformly to the products of all manufacturers. As a long period of inactivity is harmful from all points of view, the undersecretary decided that, without waiting for the final choice, each cripple would receive a temporary appliance, which would later be replaced by the standard type. Every cripple should in any case have two sets, in order that his activity and work may not be imperiled by the breaking of some part of a crutch or artificial limb.

It has also been asked if the government ought not to organize factories for orthopedic appliances in which the cripples themselves should be utilized. The undersecretary consulted surgeons and manufacturers on this point. These were unanimous in saying that the most ingenious prothetic appliances were invented, not by surgeons and manufacturers, with all their knowledge and experience, but by the cripples themselves. He therefore has sought for workmen crippled in the lower limbs, who before their incapacity, were woodworkers, mechanics and shoemakers, for employment in the manufacture of prothetic apparatus. At the Saint-Maurice asylum, near Paris, a workshop is being constructed, and also at Lyons, in connection with the Ecole des mutilés.

TREATMENT OF THE SEQUELAE OF WOUNDS BY PNEUMATIC MASSAGE

Dr. J. Bergonié, professor of biologic physics and of the clinic of medical electricity at the Faculté de médecine de Bordeaux, has reported to the Académie des sciences a method of treatment of the sequelae of wounds, which consists in applying to the affected members or regions a mechanical and pneumatic massage, by rhythmic variations of pressure transmitted to the parts through capsules or drums, one of the walls of which is alternately inflated and deflated. These various receptors or massage instruments may be adapted, in size and in form, to the most varied cases. They transmit pressures of a kilogram per square centimeter and more, and likewise the slightest degree of pressure, scarcely brushing the skin. The pressure may be regulated by a stopcock. The variations of pressure or pulsations are furnished by a piston pump without valves, giving 120 alternations of pressure and aspiration per minute. The apparatus already installed, with 25 mechanical masseurs, can give 300 pneumatic massage treatments in a six-hour day. Excellent results have been obtained in cases of paralysis due to fractures of the hand, stiffness of the fingers, vicious adherent or deep cicatrices, myositis due to retraction of cicatrices, edemas and trophic troubles, tendinous and muscular adhesions, etc.

This new method cannot take the place of manual massage administered by a trained and experienced physician, but it does permit a great number of wounded to benefit by massage.

TREATMENT OF WOUNDS BY MAGNESIUM CHLORID

Dr. Rosenblith of Paris has reported to the Académie de médecine the results which he has obtained by dressing wounds with a 1.2 per cent. solution of magnesium chlorid. Cicatrization is much more rapid in wounds so dressed than in the case of wounds dressed with the usual antiseptics. Prolonged suppuration and cytolysis are avoided.

BERLIN LETTER

BERLIN, Oct. 13, 1915.

Personal

Professor Oberländer, the urologist, died in Dresden, October 2, at the age of 66 years. He was the associate of Nitze, the inventor of the cystoscope, and as such contributed much to the development of the instrument and its use in urethroscopy. He was also associated with Professor Zülzer in the publication of the "Clinical Handbook of Genito-Urinary and Sexual Organs." He has published many monographs and textbooks bearing on the pathology and treatment of gonorrhea. He was the editor of the *Zeitschrift* and *Zentralblatt für Urologie.*

Health of Prussia and Germany

Two comprehensive publications which appeared recently contribute information as to health matters in Prussia and Germany. One book entitled "Health Matters in Prussia during 1913" was published by the medical division of the ministry of the interior; the other book was the eighteenth volume of medical statistics of the imperial health department. It was entitled "Vital Statistics of the German Empire during 1912." The one essential point brought out by these publications is the fact that health conditions have improved very much. The total mortality for 1913 in Prussia was 14.9 per thousand population, as against 15.49 in 1912 and 17.21 in 1911. The natural increase in population was 3,021 greater than in the preceding year, but because of the continued decrease in the birth rate, this increase did not equal that of previous years. The birth rate per thousand population was 28.17, as against 28.88. The decrease in the birth rate was 0.71 greater than the decrease in mortality, which was 0.59 lower than the next lowest rate. In 1912 the number of births was greater by 12,783 than in 1913; in 1906 it was 99,527 greater. In the cities 513,135 children were born, and in the country 696,520. Of the former, 16,354 were born dead; of the latter, 19,615. The provinces of West Prussia and Westphalia led in the number of children born living, whereas Brandenburg and the suburbs of Berlin had the lowest number of children born living. Exclusive of those infants born dead, 175,989 infants died during the first year of life; 71,880 of these died in the cities. The remaining 104,109 died in the rural districts. A lowering in mortality was particularly noticeable in cases in which the cause of death is given as congenital malnutrition and developmental defects, nervous diseases, cerebral apoplexy, old age, and diseases of the respiratory and circulatory organs. The mortality was higher where the cause of death was diseases of the digestive organs, suicide, murder or accidents.

There is no appreciable decrease in the mortality from diphtheria, tuberculosis and scarlet fever. On the other hand, the mortality from whooping cough has been lowered, whereas that of measles, smallpox and venereal diseases is higher. During this time there were 76,631 cases of diphtheria, as against 77,420 in 1912; 171 cases of cerebrospinal meningitis as against 178 cases; 5,220 cases of puerperal fever as against 4,888; 38,318 cases of pulmonary and laryngeal tuberculosis as against 39,820; 70,396 cases of scarlet fever as against 66,070; 9,443 cases of typhoid as against 11,353 cases, and 58 cases of smallpox as against 165 cases during the preceding year. Twenty of the smallpox patients were foreigners. Most of the native or domestic cases occurred among persons who were infected by the foreigners. Forty-one of these patients had been given a timely vaccination, as against thirty-two similar cases in 1912. In each case this was the first vaccination, but vaccination could not be held responsible for the subsequent fatal illness.

In 1913 there were 2,344 general hospitals, exclusive of private hospitals with ten beds or less. The number of available beds was 1,177,184. These hospitals took care of 1,534,209 patients, with a total of 42,715,475 bed days.

These statistics also show that, based on the census of 1910 and 1900, the number of living persons between the ages of 30 and 60 has increased by 9.6 during this decade over all other age classes. Between the ages of 1 and 60, this increase was 3.3 per cent., although the deaths among the nurslings diminished by 3.4 per cent. The death rate as well as the birth rate of 1912 was the lowest recorded, although the figures of Prussia for 1913 are still lower. A consideration of the mortality by ages shows a considerable diminution in infant mortality as against 1911, noted for the extreme heat. The death rate between 1 and 15 years is also lower, but has not decreased among those dying after 15 years. The mortality from gastro-intestinal diseases is considerably lower, whereas the mortality is higher for diseases of the circulatory organs, the appendix, malignant disease and puerperal fever than it was during the half decade of 1905-1910. During the same period, the death rate from pulmonary tuberculosis was 15.2, as against 13.1 in 1913. The total death rate per 10,000 of the middle class fell from 175.2 to 155.4 per cent.

Transportation of the Wounded by Aerial Tramway

One of the Bavarian divisions in the south Vosges mountains has built several electric aerial tramways (*Drahtseilbahn*) for the purpose of transporting ammunition, food and building material for the army. Several hundred soldiers under the direction of engineering officers constitute the personnel of this railway. After a battle, or at any other time that the wounded need to be transported, special baskets are attached to this tramway in which the wounded can be transported comfortably through the mountain territory to the nearest railway station in the valleys.

Deaths

Brigadier-General George Miller Sternberg, Surgeon-General, U. S. Army, from 1893 to 1902; died at his home in Washington, D. C., November 3, aged 77. Dr. Sternberg was born at Hartwick Seminary, Otsego County, N. Y., June 8, 1838; received his preliminary education in that institution and commenced the study of medicine at Cooperstown, N. Y., under the preceptorship of Dr. Horace Lathrop and then attended lectures in the College of Physicians and Surgeons in the City of New York from which he was graduated in 1860. He entered the Army as assistant surgeon in 1861, was promoted to captain in 1866, to major in 1875, to lieutenant-colonel in 1891 and two years later was appointed Surgeon-General of the Army; he was retired June 8, 1902. During his more than forty years of active service in the Army, General Sternberg was repeatedly on duty against Indians, in epidemics of yellow fever and cholera in addition to the ordinary duties which pertain to medical officers; he was a member and secretary of the Havana Yellow Fever Commission of the National Board of Health in 1879; a delegate from the United States to the International Sanitary Conference at Rome, in 1885; was detailed to make investigations in Brazil, Mexico and Cuba relating to the etiology and prevention of yellow fever, from 1887 to 1889, and was consulting bacteriologist to the health officer of the port of New York in 1892 when the cholera ships came to that port. He was president of the American Medical Association in 1896; president of the Association of Military Surgeons of the United States in 1894; once president of the American Public Health Association; president of the section on Military Medicine and Surgery of the Pan-American Congress; vice president of the American Microscopical Society and a member of many other learned societies at home and abroad. General Sternberg was best known as a bacteriologist; his work on "Bacteria" published in 1884 and his "Manual of Bacteriology" which appeared in 1892 are standard works. He was a pioneer in this line of research work and was a prolific writer on the etiology of diseases, comparative value of methods of disinfection, and the like. Since his retirement from the Army, General Sternberg has resided in Washington, D. C. On his seventieth birthday, June 8, 1908, he was given a complimentary banquet by residents of Washington, both military and civilian, who paid tribute to the service to humanity rendered by General Sternberg, and after a number of laudatory addresses, presented him with a silver loving cup. While General Sternberg made an enviable record as a military sanitarian, having been repeatedly commended in orders, he was a scientist of world-wide fame, and a genial gentleman beloved by all with whom he came in contact.

Brigadier-General George Miller Sternberg, 1838-1915.

Nathaniel D. Cox, M.D. Medical College of Indiana, Indianapolis, 1884; aged 73; formerly a Fellow of the American Medical Association; a member of the Indiana State Medical Association and a charter member of the Owen County Medical Society; a veteran of the Civil War; died at his home in Spencer, Ind., October 27, from heart disease.

Edward Porter Colby, M.D. Long Island College Hospital, Brooklyn, 1861; aged 76; acting assistant surgeon, United States Navy, for three years during the Civil War; professor of nervous diseases in the Boston University School of Medicine; consulting neurologist to the Massachusetts Homeopathic Hospital and the Westborough Insane Hospital; died at his home in Boston, November 1.

Edward S. Crill, M.D. Eclectic Medical Institute, Cincinnati, 1865; aged 72; state senator in the Florida Legislature from 1880 to 1885 and from 1897 to 1901; state treasurer from 1885 to 1889; and from 1889 until the time of his death president of the East Florida State and Trust Company, Palatka; once mayor of that city; died at his home October 23, from uremia.

Isaac L. Firebaugh, M.D. Miami Medical College, Cincinnati, 1875; aged 68; of Robinson, Ill.; a Fellow of the American Medical Association; for many years a member and once president of the Aesculapian Society of the Wabash Valley; for forty years a practitioner of Robinson; died in the Presbyterian Hospital, Chicago, October 25, from cirrhosis of the liver.

Julius Augustus Post, M.D. Bellevue Hospital Medical College, 1866; aged 68; a member of the Michigan State Medical Society; a medical cadet during the Civil War; for more than forty years a practitioner of Lansing, Mich.; once assistant superintendent of the Lansing City Hospital; died suddenly on the street in Lansing, October 28, from heart disease.

Horace Greeley Norton, M.D. University of Pennsylvania, Philadelphia, 1880; aged 57; a member of the Medical Society of New Jersey and secretary of the State Board of Medical Examiners; for two terms president of the Mercer and Monmouth County medical societies; died in St. Francis' Hospital, Trenton, October 27, from cerebral hemorrhage.

John White Stevenson, M.D. Medical College of Ohio, Cincinnati, 1883; aged 56; a Fellow of the American Medical Association; acting assistant surgeon, U. S. P. H. S., since 1893 and in charge of the office in Cincinnati; for thirty years a practitioner in that city; died at his home in Walnut Hill, Cincinnati, October 24, from heart disease.

Ira Morton Martin, M.D. Kentucky School of Medicine, Louisville, 1891; aged 49; formerly a member of the State Medical Society of Wisconsin; a specialist on diseases of the eye, ear, nose and throat; for the last nine years a practitioner of Green Bay, Wis.; died suddenly on the Oneida Reservation, from heart disease.

Hugh Clayton Blair, M.D. Vanderbilt University, Nashville, Tenn., 1908; aged 29; a Fellow of the American Medical Association and local surgeon of the Sante Fe System at Rincon, N. M., while on his way to Albuquerque, N. M., to seek hospital care for appendicitis; died on the train, October 27.

William M. Johnson, M.D. American Eclectic Medical College, Cincinnati, 1857; aged 86; a member of the Illinois State Medical Society and president of the Wayne County Medical Society in 1910; for sixty years a resident of Johnsonville, Ill.; died at his home, August 13, from carcinoma.

Josias Louis Duval, M.D. McGill University, Montreal, 1898; aged 39; of St. John West, N. B.; major in the Canadian Army Medical Corps and on duty with the First Canadian Field Ambulance in Flanders; is reported on the casualty list of September 1, as having died in Flanders.

John Ditmars VanNuys, M.D. Jefferson Medical College, 1870; aged 69; formerly a Fellow of the American Medical

Association; for twenty years physician at the Osawatamie State Hospital, Osawatamie, Kan.; died at the home of his son in New Castle, Ind., November 1, from myocarditis.

Ira D. Knotts, M.D. University of Pennsylvania, Philadelphia, 1887; aged 58; formerly a Fellow of the American Medical Association; and president of the Greene County (Pa.) Medical Society; of Davistown, Pa.; died in a hospital in Pittsburgh, October 22, from cerebral hemorrhage.

Timothy Jerome Regan, M.D. College of Physicians and Surgeons in the City of New York, 1884; aged 54; for many years a member of the staff of the New York Polyclinic Hospital and of the Brooklyn Board of Health; died at his home in Brooklyn, October 27, from nervous breakdown.

Herbert Eugene Knowlton, M.D. Harvard Medical School, 1891; aged 49; formerly a member of the Massachusetts Medical Society and a practitioner of Cambridge, Mass., and Belfast, Me.; died at his winter home in National City, Calif., October 24, from septicemia.

George D. Johnston, M.D. Washington University, St. Louis, 1858; aged 79; for many years president of the St. Louis Car Shops, but for the last thirty-five years a ranchman and real estate dealer of San Antonio, Texas; died at his home in that city, October 28.

Joseph Robert Rosson, M.D. University of Alabama, Mobile, 1888; aged 46; formerly a druggist, auditor of the Southern Express Company and a postoffice inspector; editor of the *Cullman Democrat;* died at his home in Cullman, Ala., July 29, from nephritis.

John J. Kennedy, M.D. Starling Medical College, Columbus, Ohio, 1897; aged 47; of Mill Creek, W. Va.; was murdered October 31. The motive is supposed to have been robbery. Dr. Kennedy's body was found on a lonely road near Mill Creek.

Victor Gus Becska, M.D. Detroit College of Medicine and Surgery, 1907; aged 34; a member of the Medical Society of New Jersey; and a member of the Passaic (N. J.) Board of Health for two years; died at his home in that city, October 25.

Edwin D. Schaeffer, M.D. Baltimore Medical College, 1893; aged 48; a Fellow of the American Medical Association; for many years a member of the school board of Reading, Pa.; died at his home in that city, October 23, from septicemia.

Alan Butler Murray, M.D. College of Physicians and Surgeons in the City of New York, 1890; aged 50; for many years a practitioner of Montana, but recently a resident of Clinton, Ind.; died in a hotel in Terre Haute, Ind., October 27.

George Frank Harris (license, Illinois), aged 96; a practitioner for seventy-five years; an honorary member of the Morgan County (Ill.) Medical Society; died at his summer home near Jacksonville, Ill., August 9, from lobar pneumonia.

James McGeoch, M.D. Saginaw Valley Medical College, Saginaw, Mich., 1900; aged 56; a Fellow of the American Medical Association and a well-known practitioner of Bay City, Mich.; died at his home October 28, from pneumonia.

James Gerald Cullen, M.D. University of Pennsylvania, Philadelphia, 1905; aged 38; a member of the Ohio State Medical Association and city physician of Toledo for three years; died at his home in Toledo, October 26.

E. R. Young, M.D. Medical College of Georgia, Augusta, 1859; aged 83; one of the oldest practitioners of Thomas County, Ga.; and for thirty years postmaster of Metcalfe; died at his home, August 6, from heart disease.

Joseph Leslie (license, years of practice, Illinois, 1877), aged 77; a practitioner of Macon County, Ill., for forty-eight years; and until five years ago a practitioner of Elwin, Ill.; died at his home in Decatur, Ill., October 26.

Horace K. Braisted, M.D. University of Michigan, Homeopathic College, Ann Arbor, 1880; aged 59; a physician and druggist of Delta, Colo.; died at his home, July 23, from cerebral concussion due to accidental injury.

Nicholas F. Schwartz, M.D. University of Wooster, Cleveland, 1872; aged 67; for many years a practitioner of Cuyahoga County, Ohio, and recently a resident of Chagrin Falls; died in Auburn, Ohio, October 27.

Lockhart Brooks Farrar, M.D. Berkshire Medical College, Pittsfield, Mass., 1848; aged 93; for more than half a century a resident of Ford County, Ill.; died at his home in Paxton, October 30, from senile debility.

John N. Sigler (license, Indiana, 1897), aged 66; died at his farm near Sedalia, Ind., October 15.

Marriages

P. A. Surg. Julian Mason Gillespie, U. S. P. H. S., Ellis Island, N. Y., to Miss Verna Duplantis of New Orleans, in New York City, October 20.

Benjamin Franklin Montgomery, M.D., Stevens City, Va., to Miss Lucy Deahl of Barryville, Va., at Washington, D. C., October 27.

Daniel James Ellison, M.D., Lowell, Mass., to Miss Anna Gale Newhall of Lynn, Mass., at Swam Scott, Mass., November 3.

John Samuel Hick Leard, M.D., Forest Hills, Boston, to Miss Isabelle H. Earnshaw of West Roxbury, Boston, October 26.

James Louis Quesenberry, M.D., Worthington, Ky., to Mrs. Ada Freeman Bauer of St. Matthews, Ky., October 28.

Hubert Benbury Haywood, M.D., Raleigh, N. C., to Miss Margaret E. Manor of Harrisonburg, Va., October 19.

Milton Augustus Broemser, M.D., Holly, Colo., to Miss Berenice Edwords of Kansas City, Mo., October 26.

Abraham Hyman, M.D., New York City, to Miss Belle Davis of Erie, Pa., in New York City, October 28.

Edgar Paul McNamee, M.D., Cleveland, Ohio, to Miss Ethel Marian Petrie of Oneida, N. Y., October 30.

Lawrence E. Kelley, M.D., Des Moines, Iowa, to Miss Sue Gunn of Kellogg, Iowa, at Des Moines, October 2.

Leon Wolf, M.D., Portland, Ore., to Miss Rose L. Hochberg of New York City, in Portland, October 21.

Thomas Francis Hennessey, M.D., Lynn, Mass., to Miss Gertrude Miller of Allston, Boston, October 27.

Albert David Kaiser, M.D., Rochester, N. Y., to Miss Margaret Dickinson of Brooklyn, November 4.

Matt Blakely Weir, M.D., to Miss Pearl Parker, both of Grant, Iowa, at Red Oak, Iowa, September 14.

Russell Comber Doolittle, M.D., Des Moines, Iowa, to Miss Myrtle Cordner of Chicago, October 2.

Henry W. Greist, M.D., Casper, Wyo., to Mrs. Mollie Ward Butler of Monticello, Ind., October 18.

Roscoe E. Cook, M.D., to Miss Floy D. Sloan, both of Des Moines, Iowa, at Boone, Ia., September 16.

Warren E. Bradbury, M.D., Clinton, Ill., to Miss Ida Brulle of Neillsville, Wis., October 26.

Lawrence Leslie Irwin, M.D., to Miss Zona M. McDowell, both of Bloomington, Ill., October 10.

Frank Kaiser Bartlett, M.D., Ogden, Utah, to Miss Mary Paxton of Aurora, Ill., recently.

Samuel D. Rosenthal, M.D., to Miss Tubie Greenspohn, both of Chicago, November 7.

Association News

THE DETROIT SESSION

Officers of Local Committee on Arrangements and Chairmen of Subcommittees

The following constitute the officers of the local committee for the Detroit session of the American Medical Association:

Chairman: Louis J. Hirschman.
Secretary: Ernest K. Cullen.
Treasurer: Thaddeus H. Walker.

The following physicians are chairmen of the various subcommittees of the Committee on Arrangements:

Finance: E. W. Haass.
Entertainment: A. D. Holmes.
Hotel: Roland Parmeter.
Halls and Meeting Places: F. B. Tibbals.
Registration: F. B. Walker.
Scientific Exhibit: J. W. Vaughan.
Commercial Exhibit: John N. Bell.
Printing and Publication: *J. H. Dempster.*
Automobiles: Angus McLean.

The local committee on arrangements has established an office at the Wayne County Medical Society Building, 33 High Street E., Detroit, Mich. All communications should be mailed to this address.

The Propaganda for Reform

In This Department Appear Reports of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other Matter Tending to Aid Intelligent Prescribing and to Oppose Medical Fraud on the Public and on the Profession

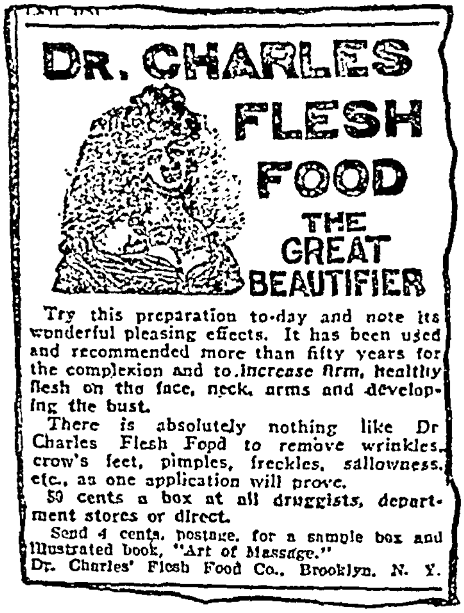
DR. CHARLES FLESH FOOD

In Brooklyn there is a concern styled Dr. Charles Flesh Food Company that sells "toilet specialties." In addition to rouge and face powders of various tints as well as soaps and toilet creams, the concern puts out such preparations as "Foot Relief" for "sore, tired, aching feet" and "Revivo" claimed to be a "Remedy for Dandruff and All Scalp Diseases." The "Dr. Charles Co. Tonic Tablets" are put forward by the company as "the very best preparation for restoring health to the debilitated; rich blood to the anemic; relief to women from their specific ills, strength to those tottering along life's pathway with a burden of liver and kidney troubles, nervous prostration, dyspepsia and many wasting diseases that lead to consumption." The product on which, apparently, they lay more emphasis than any other is "Dr. Charles Flesh Food" an ointment sold under such claims as:

> "Applied to the skin nourishes by absorption."
>
> "*It builds firm, healthy flesh.*"
>
> "Acts quickly and surely on a skin that is seamed and wrinkled either by exposure or age, smoothing away furrows of the forehead and lines about the eyes and mouth."
>
> "Undeveloped busts and those shrunken through sickness or nursing may be materially increased in size; made full, firm, plump and rounded out into a beautiful contour by the use of this wonderful flesh developer. IT ACTS ALIKE ON THE GROWING GIRL AND MATURED WOMAN."

In an advertising booklet the company declares that Dr. Charles Flesh Food has the endorsement of physicians and to prove it declares:

> "The *Therapeutic Record*, a leading Medical Journal tells in its August, 1908, number of two lady patients who used it [Dr. Charles Flesh Food] under the advice of their physician, Dr. M. P. Creel."


DR. CHARLES
FLESH
FOOD
THE
GREAT
BEAUTIFIER

Try this preparation to-day and note its wonderful pleasing effects. It has been used and recommended more than fifty years for the complexion and to increase firm, healthy flesh on the face, neck, arms and developing the bust.

There is absolutely nothing like Dr Charles Flesh Food to remove wrinkles, crow's feet, pimples, freckles, sallowness, etc., as one application will prove.

50 cents a box at all druggists, department stores or direct.

Send 4 cents, postage, for a sample box and illustrated book, "Art of Massage."

Dr. Charles' Flesh Food Co., Brooklyn, N. Y.

An appeal from the Chicago Daily News.

The *Therapeutic Record* is one of those medical journals (Heaven save the mark!) that are supported by the nostrum interests. From editorial endorsements of a fraudulent "rupture cure" (Stuart's Plas-Tr-Pads) to advertisements of such frauds as fake ear drums, Duffy's Malt Whiskey and Antikamnia, it is not a far call to the equally fraudulent "Flesh Food." Neither is one surprised to find in the advertising pages of the *Therapeutic Record* advertisements of Stuart's Plas-Tr-Pads and Dr. Charles Flesh Food. The *quid pro quo* is thus established.

Whatever Dr. Charles Flesh Food may lack in therapeutic efficiency it makes up in color and odor. The preparation is an appealing pink, highly perfumed ointment. A box of the stuff was submitted to the Chemical Laboratory of the American Medical Association and in due time one of the chemists gave the results of his investigation. The findings may be summed up as follows:

Starch	38.5 per cent.
Petrolatum (vaseline)	51.0 per cent.
Zinc oxid	2.0 per cent.
Impure stearic acid	1.5 per cent.
Perfume, coloring matter.	

From the report it is apparent that the alleged "flesh food" is no better than, if as good as, an ointment made by mixing five parts of vaseline with four parts of starch and adding a dab of zinc oxid. Dr. Charles Flesh Food is a fraud and if articles of this nature come under the purview of the federal Food and Drugs Act the concern should be prosecuted for misbranding. The stuff is not, in any sense of the word, a "flesh food"; it does not "build firm healthy flesh," it will not develop the bust and it does not "nourish by absorption."

"WHAT IS THE CHARACTER OF THE MEDICAL JOURNALS YOU READ?"

"At the session of the House of Delegates held in San Francisco, the Board of Trustees presented a special report on the work of the Council on Pharmacy and Chemistry in which it condemned in unqualified terms the advertising in medical journals of proprietary nostrums.

"We do not believe that the sincerity of the philanthropic desires of the American Medical Association in its efforts to destroy the manufacture and sale of nostrums, proprietary or otherwise, is questioned by any one except the financially interested purveyors of these fraudulent remedial concoctions. We do not believe that any one, not excepting the foregoing mentioned purveyors, questions the honesty of the reports of the Council on Pharmacy and Chemistry. It must furthermore appear patent to every one that financial gain is the one and only aim of these conscienceless individuals who dupe the public, that there is no more philanthropy in their reptilious souls than there is sympathy for any living thing in the brain of the venomous adder. No one with a modicum of reason believes that the ordinary business man invests his capital in exploiting any form of merchandise for your, rather than his material benefit. His is a crusade for profit. The American Medical Association is in need of money to carry on its beneficent projects, but is its crusade against nostrums tinged with the hue of expected profit or is it a truly altruistic crusade? The query requires no answer. It is self evident.

"Referring to the subject of the man with purely business instincts: in placing an article on the market he estimates the cost of production, its greatest obtainable profits, and the ways and means to create a demand for his ware. If its intrinsic value is approximately recognizable he must attune his profits to that general knowledge. The purchaser of his wares cannot be fooled or swindled to any great extent. If they be, their loss is a material one and can be recovered from. But when an exploiter places on the market a nostrum of no intrinsic value (excepting the bottle and cork) for which he claims virtues which it does not possess and which the wise and the unwise cannot dispute until victimized; when he envelops it in an air of mystery, appealing to superstition, ever present in the human mind, he robs the purchaser of his money and health, thereby becoming a thief of the most despicable order. Any medical journal printing the fraudulent claims contained in the advertisements of the nostrums condemned by the Council on Pharmacy and Chemistry is an accessory to this act of thievery and the subscriber to such journals voluntarily assumes the position of an accomplice."—*New York State Jour. Med.*, October, 1915.

Laboratory Research and Type of Individual.—The laboratory worker who conducts his investigations without regard to type leaves them open to criticism. Thus metabolism experiments must be conducted on individuals of the same type or the subjects will react differently to a given diet. Doubtless in this fact lies a possible suggestion for the solution of certain discrepancies reported by various laboratories working on a given problem.—John Bryant, M.D., *Boston Medical and Surgical Journal*, Sept. 9, 1915.

Correspondence

An Accurate Microchemical Method of Estimating Sugar in the Blood

To the Editor:—The microchemical method of estimating blood sugar, I described in The Journal, Nov. 7, 1914, p. 1667, is very reliable. Numerous examinations of blood, with and without the addition of known quantities of sugar, yield remarkably concordant and exact results. The maximum error encountered does not exceed ± 3 per cent.

I wish, however, to call attention to the fact that the apparatus (styled the Epstein microsaccharimeter) sold on the market has until lately included standard tubes containing solutions of improper color intensity. Estimations of blood sugar made with such standard tubes are necessarily faulty.

I have attempted to reach all those using this apparatus by personal communication, to apprise them of the error. Standard tubes are now on sale by Eimer and Amend, and also by E. Leitz of New York. These have been prepared under my supervision and contain the proper solutions.

Albert A. Epstein, M.D., New York.

Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

MAASE-ZONDEK TEST FOR URIC ACID IN BLOOD

To the Editor:—Please describe in your columns the method of Maase and Zondek for testing uric acid in the blood.

H. C. Rucker, M.D., Richmond, Va.

Answer.—This colorimetric method was described by Maase and Zondek in the *Münchener medizinische Wochenschrift*, 1915, lxii, 1110. The following is their description of the method: From the fasting patient 6 or 7 c.c. of blood are drawn into an Erlenmeyer flask containing a little sodium fluorid. Then exactly 5 c.c. of the blood is taken into a pipet and transferred to 25 c.c. hundredth-normal acetic acid and stirred vigorously while it is being heated until coagulation is complete. It is then filtered while hot into a porcelain dish. The filtrate is limpid, but a slight yellowish tint does no harm. The residue and dish are then rinsed at once with about 60 or 70 c.c. of boiling water, to which—to avoid colloid solutions—about 0.5 gm. sodium acetate has been added. This brings the total filtrate to about 100 c.c. Then 2.5 c.c. of 50 per cent. acetic acid are added and the whole is evaporated on the water bath down to exactly 5 c.c., which usually takes about an hour. There is no precipitation as a rule with this technic, but even if there is, this is immaterial. After neutralizing with a saturated solution of sodium carbonate, added a drop at a time, the contents of the dish are transferred to a 25-c.c. measuring flask and the dish is rinsed with cold water. Then 2.5 c.c. of saturated solution of sodium carbonate and 1 c.c. of the phosphotungstic acid reagent are added, and the total amount of fluid brought up to 25 c.c. by addition of distilled water. Then the mixture is allowed to stand for ten minutes to allow the blue tint to reach its greatest intensity.

Generally the fluid is limpid. It is then compared in the Autenrieth-Königsberger colorimeter with the scale for uric acid. If the tint does not correspond exactly, the fluid should be filtered once or twice. The tint is examined by good daylight, and by diffuse light. In very hot weather the fluids had better be kept cool.

They give a table of values for minute gradations, ranging from 7.7 mg. uric acid at the 20 mark to 0.8 mg. at the 85 mark. The phosphotungstic acid reagent is made exactly according to Autenrieth's directions (*München. med. Wchnschr.*, 1914, lxi, 457). They have tested all the other substances in the blood that might interfere with the reaction, but found that none reduce phosphotungstic acid except in a concentration such as could scarcely ever occur in the blood, even under extreme conditions. At the same time, to avoid possible error from this source, they deduct always 0.5 mg. as the standard figure, determined by various tests described.

The blood to be tested must have been drawn within twenty-four hours at longest, as otherwise products of albumin disintegration might interfere with the reaction. Another point they emphasize is that the evaporation must be carried to the exact point mentioned, namely, down to 5 c.c. Certain volatile substances in the mixture are driven off by this, which otherwise might disturb the reaction. The dish they use has two blue rings under the glaze, marking off the 10-c.c. and the 5-c.c. capacity. They always take whole blood for the test, as Zondek has demonstrated that the blood clot may contain more or less uric acid.

Maase and Zondek are assistants at the first University Medical Clinic at Berlin, of which His is director. Their technic requires only 5 c.c. of blood and not more than an hour and a half of time. It scarcely ever fails, they say, and is simple enough to be applied by even those unskilled in chemical research. The amounts of uric acid added to the blood are recovered with the loss of, at most, a few tenths of a milligram. The findings, especially the averages, harmonize with the figures obtained by other authors with far more complicated methods. Precipitation of the uric acid is avoided, and with it the losses inseparable from this. The average in thirty healthy persons, mostly soldiers, after three days of a purin-free diet, was 2.5 mg. uric acid in 100 c.c. of whole blood. (Steinitz' average, with the Folin-Denis method, was 2.7 mg.) In five cases of gout, the figures were 5, 4.8, 4.9, 4.5 and 5.5 mg. uric acid after three days of purin-free diet. On prolonged abstention from purins, the findings in true gout indicated a decline, the figure dropping from 5 to 4 mg. and even to 1.8 mg. in one case.

Autenrieth prepares the phosphotungstic acid reagent by boiling 100 gm. of sodium tungstate with 80 c.c. of 85 per cent. phosphoric acid and 750 c.c. of water for three or four hours, under a reflux condenser, and then diluting, after cooling, with water to 1 liter. The 85 per cent. phosphoric acid is made by gradually stirring 65 gm. of commercial phosphoric acid anhydrid into 30 c.c. water. The red sediment is separated out over an asbestos filter.

ARTICLES ON DETECTION OF TYPHOID CARRIERS

To the Editor:—I should appreciate references to recent publications bearing on the methods and reliability of the methods of examination of supposed typhoid carriers.

W. S. Rankin, M.D., Raleigh, N. C.

Answer.—The following may be referred to:

Bigelow, E. B.: Value of Widal Reaction in Detection of Typhoid Carrier, The Journal, May 4, 1912, p. 1339.

Gay, F. P., and Claypole, E. J.: Typhoid-Carrier State in Rabbits as Method of Determining Comparative Immunizing Value of Preparations of Typhoid Bacillus, *Arch. Int. Med.*, December, 1913, p. 613.

Krumwiede, C., and Pratt, J. S.: Further Observations on the Growth of Bacteria on Media Containing Various Anilin Dyes, with Special Reference to an Enrichment Method for Typhoid and Paratyphoid Bacilli, *Jour. Exper. Med.*, 1914, xix, 501.

Ebeling, E.: Typhoid Bacilli in Blood in Healthy Carrier, *Berl. klin. Wchnschr.*, April 13, 1914; abstr., The Journal, May 16, 1914, p. 1588.

Mayer, A.: Examination of Gall Bladder after Cholecystectomy to Discover Chronic Typhoid Bacilli Carriers, *München. med. Wchnschr.*, May 19, 1914; abst., The Journal, June 27, 1914, p. 2054.

Schmitz, H.: Determination of Typhoid Bacilli in Stools, *München. med. Wchnschr.*, Oct. 20, 1914.

Wile, V. A.: Typhoid Bacilli in Blood Revealed by Microscope, *Ugesk. f. Læger*, Sept. 24, 1914; abstr., The Journal, Nov. 14, 1914, p. 1798.

Carnot, P., and Weill-Halle, B.: Method of Determining the Presence of Bacillus Typhosus, abstr., The Journal, Jan. 16, 1915, p. 260; Simplified Technic for Cultivating Typhoid Bacilli from Blood, Bile and Stools, *Presse méd.*, March 25, 1915.

Schmidt, P.: Modified Bile Technic for Cultivation of Typhoid Bacilli from Blood, *Deutsch. med. Wchnschr.*, Jan. 7, 1915.

Koenigsfeld, H.: Improved Technic for Cultivation of Typhoid Bacilli, *München. med. Wchnschr.*, Jan. 26, 1915; abstr., The Journal, March 13, 1915, p. 950.

Gautier, P.: Motility Test for Typhoid Bacilli in Stools, *Rev. méd. de la Suisse romande*, July, 1915; abstr., The Journal, Sept. 4, 1915, p. 908.

NO ANTINARCOTIC LAW IN CANADA

To the Editor:—Will you be good enough to inform me whether there is in Canada anything corresponding to the Harrison Narcotic Law? The question has come up concerning an individual who has recently been treated for the opium habit and is thinking of going to Canada.

W. G. Richards, M.D., Billings, Mont.

Answer.—Canada has no such law as the Harrison Narcotic Law, nor is there any law serving the same purpose.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

California: Los Angeles, December 14. Sec., Dr. Charles B. Pinkham, Room 527 Forum Bldg., Sacramento.

Delaware: Dover and Wilmington, December 14. Sec., Dr. H. W. Briggs, 1026 Jackson St., Wilmington.

Florida: Jacksonville, December 7-8. Sec., Dr. E. W. Warren, 102 Front St., Palatka.

Kentucky: Louisville, December 7-9. Sec., Dr. A. T. McCormack, Bowling Green.

Louisiana: New Orleans, December 2-4. Sec., Dr. E. L. Leckert, 716 Macheca Bldg., New Orleans.

Maryland: Regular, Baltimore, December 14. Sec., Dr. J. McP. Scott, Hagerstown. Homeopathic, Baltimore, December 15-16. Sec., Dr. O. N. Duvall, 1817 N. Fulton Ave., Baltimore.

Missouri: St. Louis, December 13-15. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

Ohio: Columbus, December 7-9. Sec., Dr. George H. Matson, Columbus.

Virginia: Richmond, December 14-17. Sec., Dr. J. N. Barney, Fredericksburg.

Illinois May Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, May 13-15, 1915. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 165, of whom 135 passed and 30 failed. The following colleges were represented:

College	Year Grad.	Total No. Licensed
PASSED		
Georgetown University	(1913)	1
George Washington University	(1907)	1
Bennett Medical College	(1914) (1915, 13)	14
Chicago College of Med. and Surg.	(1914, 2) (1915, 16)	18
Hahnemann Med. Coll. and Hosp., Chicago	(1914) (1915, 4)	5
Jenner Medical College	(1915)	1
Northwestern University	(1914, 2) (1915, 14)	16
Rush Medical College	(1914, 4) (1915, 29)	33
University of Illinois	(1913) (1914, 2) (1915, 30)	33
State Univ. of Iowa, Coll. of Med.	(1912)	1
Johns Hopkins University	(1913)	1
University of Maryland	(1912)	1
Harvard University	(1913)	1
Detroit College of Med. and Surg.	(1910)	1
St. Louis College of Phys. and Surgs.	(1903)	1
University of Pennsylvania	(1900)	1
University of Pittsburgh	(1914)	1
Meharry Medical College	(1914)	1
University of Texas	(1912)	1
Queens University	(1901)	1
Trinity Medical College	(1896)	1
University of Naples	(1909)	1
FAILED		
Howard University	(1914)	1
Bennett Medical College	(1913) (1914) (1915, 2)	4
Chicago Coll. of Med. and Surg.	(1913) (1914, 4) (1915, 2)	7
College of Med. and Surg., Ph.Med., Chicago.	(1910)	1
Hahnemann Med. Coll. and Hosp., Chicago	(1914) (1915)	2
Illinois Medical College	(1910)	1
Jenner Medical College	(1914)	1
National Medical University	(1909)	1
Northwestern University	(1914)	1
University of Illinois	(1912)	1
Kentucky School of Medicine	(1903)	1
University of Louisville	(1913)	1
Minnesota Hospital College	(1884)	1
National Univ. of Arts and Science	(1914)	1
St. Louis College of Phys. and Surgs.	(1908)	1
St. Louis University	(1914)	1
Eclectic Medical College, Cincinnati	(1894)	1
Meharry Medical College	(1911) (1912)	2
National University, Athens	(1912)	1

Kentucky June Report

Dr. A. T. McCormack, secretary of the State Board of Health of Kentucky, reports the written examination held at Louisville, June 8-10, 1915. The total number of subjects examined in was 11; total number of questions asked, 110; percentage required to pass, 70. The total number of candidates examined was 84, of whom 74 passed and 8 failed, including 2 osteopaths. One candidate was licensed through reciprocity and 2 by special order of the board. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Indiana University	(1915)	81
Louisville National Medical College	(1911)	70
University of Louisville	(1915)	76, 76, 76, 77, 77, 79, 79, 79, 79, 80, 80, 80, 80, 81, 81, 81, 82, 82, 82, 82, 82, 82, 82, 83, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 88, 89, 89, 89, 89, 93, *
Baltimore Medical College	(1911)	82
St. Louis University	(1915)	82
Lincoln Memorial University	(1914) 79; (1915)	88
Meharry Medical College	(1915)	76, 77, 78, 83, 86
Vanderbilt University	(1914) 80, 87; (1915)	83, 85, 86, 86, 86, 88, 89, 90
Medical College of Virginia	(1915)	88
FAILED		
Louisville National Medical College	(1912)	73
University of Louisville	(1912) 63, 67; (1915)	68
St. Louis College of Physicians and Surgeons	(1915)	68
University of Nashville	(1908)†	53

College	LICENSED THROUGH RECIPROCITY Year Grad.	Reciprocity with
Johns Hopkins University	(1913)	Maryland

College	LICENSED BY SPECIAL ORDER OF THE BOARD	Year Grad.	Total No. Licensed
University of Louisville	(1882)	(1897)	2

* No grade given.

† Information obtained indicates that this candidate is not a graduate.

Book Notices

Habits That Handicap. The Menace of Opium, Alcohol and Tobacco and the Remedy. By Charles B. Towns. Cloth. Price, $1.20 net. Pp. 289. New York: The Century Company, 1915.

After perusing this little volume, one is at a loss to know the real object of the author in writing it. Did he intend it to be read by physicians or by the laity, or both? He surely could not imagine that physicians would readily subscribe to his wholesale arraignment of the medical profession by the purchase of his cleverly gotten up journalistic production. The book contains much that is true, much that is valuable; but the man without a medical training who attempts to preach on medical subjects to medical men must necessarily make blunders. The author makes the statement that 15 per cent. of physicians are addicted to the use of opium. Who is there in the profession who will not stigmatize this statement as extravagant? It must be admitted that the author, who is at the same time the proprietor of a sanatorium for the treatment of drug addictions, cannot be entirely disinterested when he makes the dogmatic statement, "The average sanatorium is merely a small colony of drug-users." A mere glance at the book's cover reveals, as the first line, "A revelation, a warning, a way out." This, of course, prepares the reader for some sensational reading. And the author has not disappointed us. After having censured the medical profession for their extreme ignorance and having called the sanatoriums mere money-making institutions and drug-colonies, the author has a slight premonition that some one might suspect, and he hastens to say: "Of course the general reader may think this book merely a clever advertisement. In it I state that it is wrong to stop the use of morphin and alcohol unless the victims can be treated for the habit, and next I condemn doctors and sanatoriums for their useless methods of treatment, while lauding my own. Naturally, my reader may assume that my only motive is the selfish one of money." Certainly, the assumption might be justified. Those of us who have had the opportunity to try it are convinced that the Lambert method of treating opium addiction is one of the best of the so-called rapid cures, but Mr. Charles B. Towns has not yet informed us who communicated to *him* the formula which he claims as his own.

T. B. Playing the Lone Game Consumption. By Thomas Crawford Galbreath. Paper. Price, 25 cents. Pp. 80, with 4 illustrations. New York: Journal of the Outdoor Life Publishing Company, 1915.

One of the difficult problems connected with the treatment of tuberculosis is to so inculcate in the mind of the patient the importance of strict adherence to the rules of the modern open air hygienic, dietetic treatment, etc., that the patient will single-mindedly, without deviation, carry out the essentials of the prescribed regimen and thus place himself on the road to recovery. An absolute conviction of the soundness of the regimen and the necessary self control on the part of the patient are important prerequisites of successful direction of each individual case. The tuberculous patient is particularly responsive to the lessons learned by others afflicted with the same disease. Mr. Galbreath tells of his twelve years' experience as a tuberculous patient, "chasing the cure" in Colorado. It is a heart-to-heart talk with the tuberculous patient, placing great emphasis on the importance of early diagnosis and strict observance of the necessary regimen if an arrest of the disease is to be accomplished. The author protests against the too common practice of shipping West patients without sufficient means to carry out a regimen in which the factors of time and financial means are very important. The details of the open air regimen are given in very simple language, and the factors of rest and self control are thoroughly emphasized. Climate is given a subordinate place to hygiene, diet and close medical supervision, and treatment in a sanatorium is recommended to all who cannot "discipline themselves." The practice of sending West patients without adequate means is condemned in the following pointed sentences: "The community may consider it cheaper to pay one way fares to Colorado than to run a sanatorium for its own unfortunate consumptives. . . . It is inordinate selfishness, a kind of civic thievery, and downright cruelty to the ignorant and unsuspecting invalid." The author pleads for the elimination of the too prevalent phthisiophobia, which should have no place in the relationship with a careful tuberculous patient. This volume is an important addition to popular antituberculosis literature. Placed in the hands of every tuberculous patient, it will prove itself a great aid to physicians in the efficient control of individual cases. The cost of the book is very moderate and its circulation should be widespread.

TWELVE LECTURES ON THE MODERN TREATMENT OF GONORRHEA IN THE MALE. By P. Asch, M.D. Translated and Annotated by Faxton E. Gardner, M.D., Assisting Visiting Genito-Urinary Surgeon, New York Polyclinic. Cloth. Price, $1. Pp. 104, with illustrations. New York: Rebman Company, 1915.

The German edition of this book was reviewed in this department, Dec. 5, 1914. At that time attention was called to the fact that Asch's treatment is that of the French and German schools, and that American opinion differs on several phases, for instance, especially as to the injection method—more favored in America—as against irrigations, which are the choice abroad. This translation has been annotated by the translator with a thoroughness which makes the book more valuable. Practically every page contains footnotes calling attention to the different points in which the foreign method differs from the American procedures in treating this disease. This makes the book more valuable than the original.

Medicolegal

Implied Promise to Pay for Medical Services

(Bigelow vs. Hill (Minn.), 152 N. W. R. 763)

The Supreme Court of Minnesota affirms a judgment in favor of the plaintiff, a physician, for services rendered in the treatment of the defendant's niece, aged 14. It appeared that the girl's parents had been divorced, and that she had come to live with the defendant and his wife, on their farm. Not long afterward, the girl being very ill, the defendant's wife, with his consent, drove with her to the plaintiff's office, in a village 3 miles away. Mrs. Hill stated to the plaintiff that "her girl" was sick, and that she wanted him to see her. He diagnosed the case as one of blood poisoning, gave her a treatment then, and was given directions by Mrs. Hill how to reach the defendant's farm. She told the plaintiff to do everything necessary to the girl's recovery. She did not tell him that the girl was not her daughter, and he assumed that she was until his second visit to the farm, when he was told that she was the daughter of the defendant's brother. The plaintiff continued to attend and treat the case, and after the girl's recovery rendered to the defendant a bill for his services, which the defendant refused to pay, claiming that the debt was that of the girl's father. The defendant testified that the girl was employed as a servant in his family, but the trial court found that she was a member of his household. The defendant paid a bill for drugs and one for the services of a nurse.

It is true, the supreme court says, that the rule that, when one requests the performance of services by another there is an implied promise to pay for the services rendered, does not apply where a person requests a physician to perform services for a patient, unless the relation of that person to the patient is such as raises a legal obligation on his part to call a physician and pay for the services, or the circumstances are such as to show an intention on his part to pay for the services, it being so understood by him and the physician. It is also the law that a master is not ordinarily, in the absence of a contract obligation, liable for medical services furnished his servant, though furnished at the request of the master. And it is doubtless correct that the father would be liable for necessary medical attendance furnished his daughter, though the services are requested in his absence by another. But these rules do not necessarily control the decision of this case.

The defendant knew that his wife was taking the girl to see the plaintiff, and consented. There appeared to have been no thought then, or until the bill was presented, that the defendant would not pay the physician, just as he had paid the druggist and the nurse. It would have been easy to have informed the plaintiff that he would have to look to his patient's father for his pay, but he was allowed to render his services under the assumption that the girl was the defendant's daughter, or at least a member of his household whom he was supporting. Under these circumstances the trial court was justified in finding an implied promise by the defendant to pay for the services rendered.

Choice of Persons for Taking Roentgenograms

(International & G. N. Ry. Co. vs. Bartek (Tex.), 177 S. W. R. 137)

The Court of Civil Appeals of Texas, in affirming a judgment for $2,000 damages in favor of plaintiff Bartek for personal injuries sustained in a wreck, says that one of the assignments of error was based on a refusal of the trial court to compel the plaintiff to submit to having roentgenograms taken of his back, to be exhibited to the jury. But this court does not think that the trial court abused its discretion in this matter. The facts of the case did not bring it within the rule that, while a party has the right, in the first instance, to refuse to submit his person to an examination, yet by doing so, and being so examined by his own physician in the presence of the jury, he waives his privilege in this regard, and the opposite party is entitled to have a like examination made by his physician. In this case the plaintiff exhibited his back to the jury, and his physician pointed out thereon the evidence of the injury as he claimed it to be. A like examination was made, without objection, by the physician of the defendant, who denied that profert of the plaintiff's back furnished conclusive proof that one of his vertebrae had been fractured as was claimed by the plaintiff's physician. The evidence further showed that the defendant had been afforded an opportunity to have roentgenograms of the plaintiff's back taken by an alleged expert of Houston, who presumably was impartial in the matter, inasmuch as he was not personally known to the plaintiff or either of his counsel. The plaintiff's counsel at this time objected to having such pictures taken by a party in Waco, on the ground that they doubted his competency. This was some time before the trial. The Waco party referred to was the same party whom the defendant requested should be permitted to take such pictures during the trial. The plaintiff's counsel agreed that if the roentgenogram was taken by the Houston physician he would make no objection to its introduction in evidence. The introduction of a roentgenogram taken by an incompetent person might have proved prejudicial to the plaintiff. The Waco party may have been competent, but the plaintiff's counsel did not think so, and the court was justified in not compelling the plaintiff to have a roentgenogram taken by a party who was objectionable to him, when he offered to have such picture taken by a party whose competency and disinterestedness were not called in question.

Society Proceedings

COMING MEETINGS

American Association of Anatomists, Chicago, Dec. 27-29.
American Physiological Society, Boston, Dec. 27-30.
Society of American Bacteriologists, Urbana, Ill., Dec. 28-30.
Southern Surgical and Gynecological Association, Cincinnati, Dec. 14-16.
Western Surgical Association, Des Moines, Dec. 17-18.

MINNESOTA STATE MEDICAL ASSOCIATION

Forty-Seventh Annual Meeting, held at Rochester, September 30 and October 1, 1915

(Concluded from page 1675)

Clinical Observations on Syphilitic Disease of the Heart and Aorta

Dr. R. D. Mussey, Rochester: In 1,379 cases of syphilis, clear-cut syphilitic disease of the heart or aorta occurred in fifty-nine. Syphilis of the heart does not present a typical syndrome other than that of myocardial change, dyspnea being the chief complaint, and the signs of myocardial insufficiency with dilatation and hypertrophy the chief findings. Syphilis affects the aorta more frequently than the heart. In the aortitis group pain and dyspnea are the chief complaints with the signs of insufficiency of the valves. In the aneurysmal group, pain is predominant with the usual aneurysmal signs. Blood pressure is of value in the prognosis and an aid to diagnosis, especially in the aortitis group in patients with aortic insufficiency. Syphilis of the heart and mediastinum responds more readily to treatment than syphilis of the aorta. The use of potassium iodid and mercury seems to be of value, even when the patient is showing evidence of broken compensation; these may be followed by salvarsan and more especially by neosalvarsan with marked benefit in symptoms. Vigorous and persistent treatment will apparently arrest progress in certain aneurysmal cases.

DISCUSSION

Dr. S. Marx White, Minneapolis: The importance of the aortitis and aneurysmal group is very great, and we commonly learn to look on every case of aortic lesion with considerable suspicion, a suspicion justified in the majority of instances by the discovery of the evidences of syphilis. We have lesions in the aortic valves from rheumatic infections, but they are almost without exception accompanied by lesions in the other valves. We are learning to use the Wassermann reaction early, and the Roentgen ray to recognize early cases of aortitis. In connection with aneurysm, the medical profession ought to pay very much closer attention to the question of a thorough and painstaking and complete systematic examination of the patient.

Dr. E. L. Tuohy, Duluth: There were twelve cases classed as cardiovascular. In three there was a diagnosis made of mesaortitis luetica. There were three cases of myocarditis, six of aortic aneurysm, and three cases that had syphilis had also valvular lesions due to that disease.

Open Air Treatment in Surgery

Dr. J. W. Markoe, New York: I selected 110 cases of sepsis and considered them under two main groups, namely, those that are treated in the open air and those treated indoors. In one group, the main therapeutic measure was the open air. In all but five of these cases, blood cultures taken by the usual technic under proper precautions and with appropriate mediums, demonstrated the presence of bacteria. The following organisms were recovered from the blood: hemolytic streptococcus in 94 cases; *Streptococcus viridans* in 1 case; pneumococcus in 2 cases; *Staphylococcus aureus* in 7 cases, and *Bacillus aerogenes capsulatus* in 1 case. In no case was more than one organism recovered from the blood. There were 16 cases of postabortive sepsis; 89 cases of postpartum sepsis, 67 of which were admitted from three to ten days or more after delivery, and 22 were admitted with labor in progress; also 5 cases of antepartum sepsis.

This last group of five cases is of interest, for in them even before the onset of labor, the sepsis was fully developed. Of these five cases, in one a sinus thrombosis was present; in two the sepsis followed operative interference; one incision of an abscess of the throat, and the other the removal of an appendix. In a fourth case the patient, on admission, had already a streptococcus meningitis, while a fifth case showed the presence of a general peritonitis for which no cause was found. Of these 110 cases, 42 were in the hospital less than five days with a mortality of 100 per cent.; 68 were in the hospital more than five days with a mortality of 66 per cent. Of the 110 patients, 53 were treated in the open air in addition to the other measures and 57 were indoor patients, of whom 55 died and 2 left against advice. Of the 53 cases treated on the roof, 17 were there less than five days and all died; 13 died that were there more than five days; 1 left against advice, and 22, or 42 per cent., recovered.

In these 22 cases, the following bacteria were present in the circulation: hemolytic streptococcus in 17 cases; pneumococcus in 1 case, and in 4 cases no organism was recovered. Of the cases on the roof more than five days there were 16 of the 21 without complications that recovered, whereas but 6 of the 14 showing the various manifestations of pyemia survived. Thus it seems that when no complications were present, the percentage of recovery was greater. Of the indoor patients, there was 100 per cent. mortality in the 21 cases that were in the hospital more than five days, while, on the other hand, there were 22 recoveries of the 35 treated on the roof more than five days.

In addition to these 110 cases we have treated innumerable cases in the open air where the infection was localized in the pelvis. Among these may be mentioned such cases as pyometritis, parametritis and the large inflammatory exudates commonly observed in the broad ligaments following labor. These patients seem to withstand high temperatures more readily, and they enjoy and assimilate their food better. Their facial expression changes after being on the roof for a few days, from one of despair to that of hope and assurance. The blood picture soon shows an increase in hemoglobin and red cells, which, however, coincides to a certain extent with the reduction of the temperature.

Local Anesthesia

Dr. L. E. Daugherty, St. Paul: By carefully questioning patients who have been operated on during the past year, to whom ether anesthesia has been administered, we have elicited the fact that what they most dreaded was not the operation itself, but rather the loss of consciousness and the resulting nausea and distress caused by the ether. Some on whom secondary operations were necessary have consented to return to the operating room only on the condition that local anesthesia be used.

DISCUSSION

Dr. C. R. Ball, St. Paul: There is benefit in having the consciousness and aid of the patient. Having injected a great many cases of tic douloureux with alcohol, I am conscious of the great aid the patient is able to give in these operations.

Dr. Harry P. Ritchie, St. Paul: I recall one case in which a suprapubic cystotomy was done on a diabetic under local anesthesia. This man was admitted with acidosis and acetonuria, and was practically comatose, yet I drained him suprapubically, after which he received medical treatment, and today he is a well man.

Dr. R. E. Farr, Minneapolis: In foreign countries laminectomy has been done many times under local anesthesia. There they have found that the dura is extremely sensitive in contradistinction to the condition found in the skull. In one case which I had a few months ago, the patient, an intelligent man, talked with me all the way through the operation. In this case I turned up a wagnerian flap as large as my hand. It was impossible to put a needle through that flap of dura without the most intense pain referred to the eyes. I followed Lenander's work for a number of years, and I do not always agree with him. In a case of resection of the intestine, for instance, the patient had a sharp pain every time I put the needle through his intestinal wall, although no traction was made on the mesentery. Again, in some cases patients coming in with a fair-sized ovarian cyst speak of pain on the right side, and give a history of chronic appendicitis. In these cases, by taking hold of the cyst, compressing its pedicle, and compressing the nesentery in various places, we have been able to deliver each of these organs without causing the pain for which the patients sought relief.

Varicose Veins

Dr. D. C. Balfour, Rochester: The veins which are most commonly the site of varicosities are the hemorrhoidal, the spermatic and the long saphenous. It is usually a disease of middle life, although in our series several patients were under 25 years of age, and the ratio of male and female was 3:2. The etiologic factors most apparent were: (1) the occupation which necessitated the prolonged erect posture, and (2) the anatomic and physiologic factors present in veins in the lower extremities, which are important in that they afford opportunity for exciting causes to produce the condition. In 40 per cent. of this series there were chronic ulcers on one or both legs. The chronic congestion of the skin and subcutaneous tissue is a strong predisposing factor to the formation of the ulcer, and a very slight injury may be sufficient to produce a lesion resistant to healthy healing. If these ulcers are not treated, or the causative condition relieved, they increase steadily until they reach an enormous size; they are also subject to malignant degeneration. Preoperative treatment is occasionally advisable, particularly if there is ulceration, or in cases of recent phlebitis in which redness and pain, marking local thrombosis, still exist along the course of the vein. The most satisfactory method, in my experience, for the subcutaneous extirpation of a long saphenous, is that of C. H. Mayo. Of 256 patients, 161 were heard from. Of these, 68 were complicated with ulcer, 93 were without ulcer, and 39 (57.3 per cent.) of the 68 were cured, that is, the ulcer healed, the veins disappeared, and there was no swelling of the feet. Sixteen (23.4 per cent.) were greatly improved, the ulcer healed in the majority, with some of the patients complaining of swollen feet or aching of the legs after a long day's work. Eighty per cent. were either cured or improved, 13 (19 per cent.) were definitely unsatisfactory as regards results. Of the 93 cases without ulcer, 67 (73 per cent.) were cured, 16 (17 per cent.) improved, and 10 (10.5 per cent.) were unsatisfactory. In practically 90 per cent. of this group, good results were obtained. In no case had less than one and one-half years elapsed since operation.

The Prone Position and Its Uses

Dr. M. M. Ghent, St. Paul: Pneumonia patients who are beginning to show signs of exhaustion, such as shortness of breath and cyanosis, are benefited by being placed on the stomach. This is especially true of children with bronchopneumonia. In this position the cyanosis is much less marked during the paroxysms of coughing, and the patient sleeps much better, because the breathing is easier. All of this convinces me that patients under conditions such as I have named above breathe poorly when they lie on their backs. This is especially true in babies because of their helplessness. It is also true of some patients who are unconscious from any cause. This has led me to believe that we keep our patients lying on their back too much; especially is this true after operations. My plan now is to let patients lie in any position in which they are most comfortable. Patients coming out from under an anesthetic are given pillows enough to make them comfortable.

Perforating Gastric Ulcer Following Gastro-Enterostomy

Dr. Arthur N. Collins, Duluth: Gastro-enterostomy is not a curative procedure for all ulcers of the stomach. Simple gastro-enterostomy will not suffice where excision should be done. It does not revolutionize the patient's healing power per se. Postoperative medical care should be established in all cases until cumulative experience tells us where to leave it off. From the standpoint of the patient, simple gastro-enterostomy does not accomplish all that should be really expected of a fairly major surgical operation.

DISCUSSION

Dr. William J. Mayo, Rochester: It is true, gastro-enterostomy does not furnish the complete and satisfactory results in ulcer of the stomach that it does in ulcer of the duodenum. It is extremely fortunate that ulcer of the duodenum is so much more frequent than ulcer of the stomach. About 75 per cent. of all peptic ulcers are in the duodenum, and as long as the stomach itself is normal and the gastro-enterostomy is done on the functionating organ, a cure or at least very great improvement may be expected in as high as 90 per cent. of the cases. I know of no operation in surgery that gives more satisfactory results than gastro-enterostomy or an equivalent operation in ulcer of the duodenum. The failures of gastro-enterostomy that are due in the main to the operation are because the condition in the stomach may not be suitable for the operation; that is, the ulcer may be proximal to the gastro-enterostomy, and in such cases we cannot expect the gastro-enterostomy to cure the patient. In the second place, a gastro-enterostomy is done in many cases in which ulcer does not exist, based on the symptoms of the patient. No surgeon should do gastro-enterostomy for ulcer which cannot be demonstrated accurately at the time of the operation.

Dr. A. C. Strachauer, Minneapolis: Gastro-enterostomy is no longer performed except when ulcer can actually be demonstrated. The ulcer is eradicated either by excision or by the actual cautery. The majority of men with experience in gastric surgery feel very much concerned as to the possibility of malignancy developing on an ulcer, and feel much easier in mind when the ulcer is eradicated either by excision or by the cautery.

AMERICAN ROENTGEN RAY SOCIETY

Sixteenth Annual Meeting, held in Atlantic City, N. J., Sept. 22-25, 1915

(Concluded from page 1670)

New Roentgen Evidence in Early Diagnosis of Gastric Carcinoma

Dr. A. W. George, Boston: Chronic ulcer alone near the pylorus will not show a deformity or defect other than th classical Roentgen sign of ulcer. When the ulcer begins undergo degeneration, the changes due to beginning malignancy can be demonstrated. It is what we have termed th annular deformity. This is ringlike in character, increasin the long diameter of the pyloric sphincter toward the antrum and it is constant in all positions. This is a positive earl sign of gastric cancer.

Roentgenologic Diagnosis of Duodenal Ulcer

Dr. Russell D. Carman, Rochester, Minn.: Though would not place exclusive reliance on cap distortion fo diagnosis, I consider this sign one of the best and well wort searching for in those cases in which more simple method of examination fail to establish or exclude the presence o duodenal ulcer. Irregularities of the duodenal outline ar not pathognomonic of ulcer. Some ulcers do not produc an organic distortion which may be demonstrated roentgenographically, while irregularities of the duodenal contour may sometimes be produced by pericholecystitis and other adhesion-producing lesions, or by spasm reflected from distant sources. Deformity due to such causes is much less common than deformity resulting from duodenal ulcer. Deformity of the bulb and spasm arising from distant sources is more often lacking in persistence and permanency of situation. Deformity, when present as a result of ulcer, is more likely to be constant. While some duodenal ulcers produce a scar, distortion of the duodenal lumen, which can readily be seen on the roentgenogram in other organic deformity, is so slight that it cannot appreciably distort the barium shadow. This is especially true of small mucous or slit ulcers. If bulbar distortion is the result of the intrinsic spasm, the administration of an antispasmodic, such as belladonna, may relax the spasm and cause the deformity to disappear. This is still under investigation. Since using the serial method, our diagnosis of duodenal ulcer has been confirmed at operation with fewer exceptions than before, and fewer ulcers have escaped diagnosis. We have not limited ourselves to this method, but have added it in certain cases of suspected ulcer to our routine screen and plate examinations, because it is not always necessary to make multiple plates. Hypertonus, hypermotility and hyperperistalsis are most valuable indications of duodenal ulcer. These phenomena are seen in various combinations, and often all together. Hypertonus is seen in the majority of duodenal ulcers, perhaps more frequently in this than in any other condition. Gastric hyperperistalsis is notable in a large proportion of the cases, perhaps 60,000 or more. Hypermotility is the logical result of hypertonus and hyperperistalsis. More than one quarter of these ulcers are certainly obstructive and produce a six-hour retention. In testing motility, our modification of Haudek's double meal method is an indispensable part of our routine. A six-hour retention in the stomach, with an unbroken contour, ought, first of all, to suggest duodenal obstruction, and the most common cause of this is duodenal ulcer. If there is typical gastric hyperperistalsis, the presence of duodenal ulcer is well-nigh certain.

DISCUSSION OF PAPERS BY DRS. GEORGE AND CARMAN

Dr. Lewis G. Cole, New York: Dr. Carman referred to duodenal ulcer, gallbladder adhesions and spasm as being causes of the wave defect in the cap. That is true, but the first two cause permanent organic filling defects and the latter does not. In the case of duodenal ulcer and gallbladder adhesions, the indications for surgical treatment are the same. Some cases of spasm cannot be diagnosticated. I have made a diagnosis of ulcer when it was a case of spasm. In the past year I have seen two cases of adhesive membrane involving the cap that caused a filling defect, which might lead one to diagnose duodenal ulcer. There may be a great deal of deformity with very few symptoms. We should not make the diagnosis too positively. When we find an induration, we should say so, and advise surgical intervention.

Dr. George E. Pfahler, Philadelphia: We should make as nearly a definite diagnosis as possible. If we believe it is carcinoma, we should say so, because otherwise the patient will not be operated on. We leave the surgeon in doubt. On the other hand, we must not state anything definitely that is not there. Dr. Carman presented as nearly the truth on the question of duodenal ulcer as we are able to state it today.

Dr. Frederick H. Baetjer, Baltimore: Spasm is more or less transitory. Two cases came under my observation that are worth mentioning. A girl of 18, with indefinite stomach symptoms, had a filling defect of the greater curvature. The same defect was present on the following day. At the end of a week and at the end of two weeks it was still present, and, finally, it was decided to operate on her. The stomach was normal. Absolutely nothing was found to account for the deformity. Even an examination of the inside of the stomach was negative. A second patient came in with a definite roentgenologic diagnosis of carcinoma, made by a competent roentgenologist. The patient was operated on, but nothing was found. The roentgenograms were reviewed and still the diagnosis of carcinoma of the stomach was made. Six months later another examination was made, with the identical results. We gave the patient atropin for two or three days, and the next examination showed a normal stomach outline. We now employ atropin as a routine, giving from 1/100 to 1/120 grain two or three times a day until the patient begins to feel dry. In one or two obscure cases it has helped me out very much.

Dr. W. F. Manges, Philadelphia: As we now have apparatus that can be used safely for fluoroscopic work, we should extend the examination in these cases beyond the stomach and duodenum, including the entire gastro-intestinal tract, in order to discover other lesions that may be present. That is particularly true of the lower small bowel and the appendix region, where lesions may be overlooked by the surgeon when he is operating for gastric or duodenal ulcer.

Dr. George C. Johnston, Pittsburgh: I have never had any trouble in getting surgeons to accept help in diagnosis. I remember a case of a woman, aged 60, in which the report was early carcinoma of the stomach. The surgeon operated and found the pylorus normal in appearance. He palpated the pyloric region carefully, and did a resection and a posterior gastro-enterostomy. After very careful palpation of the pylorus he had felt an annular ring. There was no erosion of the mucosa—just a little constriction or tightness. The pathologist reported adenocarcinoma. In this case the Roentgen evidence of the disease was responsible for finding the carcinoma. Therefore, I am going to continue to say to the surgeon that, to the best of my knowledge and belief, a careful exploratory operation is justified.

Dr. Wm. H. Stewart, New York: In a case of carcinoma with annular deformity the surgeon hesitated to admit that it was a cancer, and claimed that it was an ulcer. I insisted on a pylorectomy, and on microscopic examination the tumor proved to be a carcinoma of the pylorus. That was the third case of the kind I have had.

CHICAGO MEDICAL SOCIETY

Regular meeting, held Oct. 27, 1915

The President, Dr. Charles F. Whalen, in the Chair

SYMPOSIUM ON LEPROSY

The Fear of Leprosy

Dr. E. L. McEwen: The fear of leprosy arises from erroneous conceptions of the disease; but this fear exists as a definite social factor which is operative to the detriment of occasional victims of the disease in this country. Every physician should take a firm and true stand with regard to leprosy, in order that the lay mind may view the disease more rationally, so that the persecution of lepers when they are discovered shall not occur. This means a campaign of education by every physician with his patients and with his friends in the direction of enlightening the people as to what true leprosy is and the great difficulty of contagion.

Clinical Description of Leprosy

Dr. Oliver S. Ormsby: The clinical picture presented in leprosy depends on whether the integumentary or the nervous system is wholly or chiefly invaded by *Bacillus leprae*. No definite time limit exists between the time of infection and the development of symptoms. It is variously estimated from a period of many weeks to several years. From the time of infection until the eruptive manifestations occur, various prodromes are frequently noted. These differ in no way from those occurring in any other infectious process. The lesions in the eruptive type of the disease may occur on any part of the body. In the anesthetic variety the symptoms exhibited in the part supplied by the affected nerves are those which would naturally follow their irritation, compression or degeneration. The prodromes and macular stage of this variety may be severe or be altogether absent.

Pathology and Bacteriology

Dr. Fred G. Harris: Over seventy attempts have been made to transmit the disease in man by inoculating leprous material from one individual to another, only one, that of Arning, being successful. The bacilli are much more frequently found in the nasal secretion of cases of long standing than in early ones. The bacilli are not often found in the nasal secretions of healthy persons who are in intimate contact with lepers. The most common atrium would seem to be through the skin, for a large majority of the cases give a history of the disease commencing on the extremities. In a series of 275 cases the disease began on the feet in 58 per cent., and on the hands in 11.2 per cent. The infection is disseminated by the blood stream.

Sanitary Aspects of Leprosy in the United States

Dr. William Allen Pusey: Leprosy in North America is limited to a few foci. There has been a focus of leprosy at Tracadie, N. B., for nearly a hundred years. According to Dr. A. C. Smith, leprosy in that district can be definitely traced to one case introduced from Normandy in 1815.

Numerous cases have developed subsequently in that district. The living conditions are hard and the people poor, and there is a lazaretto there containing twenty-six beds. As a result, however, of partial segregation and better living conditions of the people, few of the beds are now occupied, and leprosy is rapidly diminishing in that district. Many cases have been introduced into Minnesota and the other Middle Northwestern States by Scandinavian immigrants. In 1900, according to Bracken, eleven cases of leprosy were known in Minnesota, and in 1903 no new cases had been reported. A few cases of leprosy exist along our Mexican frontier among Mexicans. These have practically been uncontrolled without spread of the disease beyond these people. There has always been a considerable number of lepers in New York, and there are always probably one or more in the Chicago district. These have always been foreigners, and no case has been known to originate in either place. In New York the number is estimated as high as 100, but there has never been any effort to segregate them. They have been admitted freely to the public hospitals. The chief foci of leprosy in the United States are in Louisiana and in Key West. The experience of civilized people in other parts of the world in respect to leprosy corresponds to that of the United States in regard to its slight infectivity. Where leprosy is endemic the situation is different, and public protection requires that practical —not absolute—segregation should be carried out. In districts like Louisiana, where leprosy is active, every effort should be made to segregate lepers as completely as possible.

To that end public asylums of refuge should be provided for them, as has been done in Louisiana. The establishment of a national sanatorium for lepers is advocated by the surgeon-general of the U. S. P. H. S. Federal care and control is undoubtedly the solution of the comparatively simple sanitary problem of leprosy in the United States, and should be insistently advocated by medical organizations, and other organizations within whose purview come matters of public health.

Discussion on Leprosy

Dr. David Lieberthal: According to the historical review of pre-Bible times, there were records of leprosy in the papyri of the Egyptians thousands of years before the Bible, leprosy having prevailed around the region of the Nile from which it spread over Europe. In the middle ages, leprosaria or asylums for lepers increased in great numbers. One could imagine conditions in these asylums under which victims of the disease were huddled together and the manner in which they were taken care of, being subject to reinfection, and yet, with the advent of syphilis, it was noted that leprosy was on the wane. The number of cases was materially decreasing. I believe this decrease was due to the acquirement of a certain immunity. Leprosy is not altogether incurable. The hygienic and dietetic methods of treatment are the same as for any other disease. Lepers suffer from what is known as heat hunger; consequently they ought to be kept warm. They should be given baths. In some countries, as in Japan, lepers are sent to mineral springs and kept there for a long time. If patients cannot be sent to hot springs, plain baths can be given. If there are nodes, Unna suggests they be ablated, cut off flat with a sharp knife or razor until blood begins to flow, and their bases cauterized, and medicinal applications made which consist of remedies of the phenol group, especially pyrogallic acid and resorcin. This is rubbed in and the places covered over with plaster. As a remedy for use internally, I would mention chaulmoogra oil. The leper should be kept under constant observation. It would be a step in advance if the federal government established a colony or home for the lepers of the United States, to which they could go voluntarily and be assured they would be cared for properly.

Dr. O. S. Ormsby: I heartily endorse the recommendation concerning the establishment of a leper home and of placing the victims of this disease under federal control.

Dr. W. A. Pusey: I would recommend that the society express its approval of the establishment of a leper home under the control of the federal government as recommended by Surgeon-General Blue of the U. S. Public Health Service.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

November, X, No. 5, pp. 313-396

1 *Etiology of Tetany — Metabolic and Clinical Studies. A. Brown and A. Fletcher, Toronto.
2 *Ductless Gland Therapy. R. S. Haynes, New York.
3 Spinal Fluid in Poliomyelitis and Its Differentiation from Fluids of Other Infections. H. L. Abramson, New York.
4 *Clinical Study of Children in Relation to Tuberculous Exposure Controlled by Von Pirquet Reaction. J. B. Manning and H. J. Knott, Seattle.
5 Congenital Malformation of Intestine. L. M. Drennan and H. C. Clark, Ancon, Canal Zone.
6 Intestinal Parasites in Children. G. J. Greil, Montgomery, Ala.
7 Polycystic Disease of Kidney in Infant Three Months Old. J. S. Leopold and M. B. Künstler, New York.

1. **Tetany.**—It was Brown and Fletcher's object to see that if by changing the various food elements, tetany could be produced with a fair degree of certainty, and to note any change in the inorganic salts during the onset, height and curing of the condition and what substances were responsible for the ultimate healing. Their observations were made in thirty cases of definite tetany; and 100 infants thought to be free from tetany were carefully tested, electrically and mechanically, for any evidence of spasmophilia. They found that tetany may be produced by high carbohydrate foods which have been subjected to heat up to or over the boiling point. The monthly incidence of tetany is probably due to a disturbance of the gastro-intestinal tract (constipation), decreased internal combustion and the comparative safety from diarrhea in feeding high carbohydrate foods during the cold months. A diagnosis of tetany is suggestive when there is manifest kidney inactivity in constipated infants fed heated foods of high carbohydrate content. As a result of this improper feeding there is produced a disturbance of the body salts. At the height of the disease there is an almost complete retention of sodium and potassium (the irritating salts) and a great loss of magnesium. As improvement ensues there is an increased flow of urine accompanied by a relief of the constipation, during which the stored up sodium and potassium are rapidly lost. This salt disturbance may be remedied first by purgation, second by diuresis, third by the administration of cod liver oil and phosphorus to build up the calcium content, and fourth by a change of diet. The severe spasms or convulsion may be temporarily relieved by subcutaneous injections of a solution of magnesium sulphate.

2. **Ductless Gland Therapy.**—This contribution has to do with the action of the pars intermedia of the pituitary gland. These particular activities of the gland, from a therapeutic standpoint, have become apparent through a study of an abnormal child carried on for the past two and a half years by Haynes, and previously by several physicians connected with the dispensary of the Babies' Hospital, including Drs. Kerley and Van Ingen. It seems evident in this case, that, assuming a deficiency of thyroid as evidenced by the condition when first coming for treatment, there was also an affection of the pituitary; that this affection of the pituitary partook of the nature of a deficiency of the pars intermedia, and that the exhibition of pars intermedia improved the condition in unexpected ways. It was interesting in following the unfolding of this case to see 1. Symptoms which might rationally have been considered to be due to hypothyroidism clear up with the exhibition of pars intermedia. 2. The remarkable effect which the exhibition of this lobe had on the smoothness, texture, and color of the skin and its warmth. 3. The striking changes in contour of hands, ankles, hips, shoulders, thighs, etc., changes which could be made to come or recede with giving or taking away of the gland.

4. **Tuberculosis.**—There are 166 children out of the 288 examined by Manning and Knott who have been or still are living in intimate contact with active adult cases. In the remaining sixty-two there is no known exposure. These adult contacts, in most instances, one or the other parent, in a few instances both parents, or older brothers or sisters,

are in the stage of lung invasion in varying degrees of activity. There are eighty-four of the 166 children with a definite history of exposure who give a positive von Pirquet test, or about 50.6 per cent. Of this number the largest part, sixty-nine, or 81.2 per cent., show no clinical evidence of tuberculosis. There are fifteen children, representing 17.8 per cent. of those children exposed to tuberculosis, who give a positive reaction and clinical evidence of tuberculosis. They show varying degrees of activity and types of infection, including seven cases of bronchial gland tuberculosis, one active keratitis, two with cervical adenitis, four with distinct lung invasion, and one with tuberculous peritonitis. One inactive, clinically nontuberculous child developed an active tuberculous peritonitis under observation.

Most of those diagnosed as bronchial gland tuberculosis are children with a distinct history of not doing well, with subnormal or slightly elevated temperature, frequently complaining of pain in chest or back, poor appetite, weakness or listlessness, with dilated chest veins, but no physical evidence of tuberculosis except sometimes paravertebral dulness. Roentgenograms showed corresponding shadows about the right hilus. There were eighty-two children with a definite history of exposure who gave a negative von Pirquet. This represents about 49.3 per cent. who give negative reactions out of the total 166 exposed to tuberculosis. One of these children gives distinct clinical evidence of tuberculosis, in which instance, as would be expected, the process has advanced to the third stage. There are eight in whom one of the authors recorded questions of finer shades of harsh breathing. In view of the fact that cutaneous reaction is negative in the presence of measles, it is stated that none of these children had measles at this time or within recent date. Sixty-two children were brought to the clinic because of poor nutrition, or by fear that something of the nature of tuberculosis might be present, rather than because of any known exposure. Fourteen of these sixty-two children, or about 22.5 per cent., give a positive von Pirquet, the remaining forty-eight, or 77.4 per cent., give a negative test.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

October, LXXII, No. 4, pp. 577-768

8 *Reappearance of Menstruation after Childbirth. H. Ehrenfest, St. Louis.
9 Serum Skin Test for Pregnancy and Different Pathologic Conditions. J. Bronfenbrenner, J. R. Freeland and M. J. Schlesinger, Pittsburgh.
10 Two Cases of So-Called "Missed Labor." S. P. Warren, Portland, Me.
11 Drainage and Dressing. H. S. Lott, Winston, N. C.
12 Relation of Pelvic to Abdominal Surgery. H. G. Wetherill, Denver.
13 *Tuffier's Ovarian Graft. W. A. Norton, Savannah.
14 Unilateral Impairment of Kidney in Toxemia of Pregnancy; Report of Cases. T. W. Buschmann, Philadelphia.
15 After-Results of Curetment of Uterus. J. H. Girvin, Philadelphia.
16 Intranasal Treatment of Dysmenorrhea; Report of Cases. C. A. O'Reilly, Philadelphia.
17 Case of Mercurial Poisoning from Vaginal Douche. E. Foskett, New York.
18 Case of Tuberculosis of Urachus. J. R. Eastman, Indianapolis.
19 Case of Chorio-Epithelioma Uteri with Large Bilateral Lutein Cystomata of Ovary. E. Schwarz, New York.
20 Outlet Pelvimetry; New Pelvimeter for Measuring Transverse and Posterior Sagittal Diameters. G. H. Pierce, New York.
21 Primary (Celoic) Prolapse of Vagina with (Traction) Elongation of Cervix Versus Prolapse of Uterus. A. B. Keyes, Chicago.
22 Sterility; Causes and Treatment with Original Stem Pessary. C. H. Judd, Detroit.
23 Developmentally Deficient Children Twice Born to Same Couple. W. C. Gayler, St. Louis.

8. Reappearance of Menstruation After Childbirth.—From the results of Ehrenfest's statistical study of the problem of lactation amenorrhea it seems that clinical experience evidently sustains the following views: A debilitating influence exerted immediately by labor and later by the loss of body fluids during lactation with rare exceptions temporarily arrests ovulation. As soon as the disturbed equilibrium is restored the ovary resumes its function of ovulation, and the first corpus luteum sends its specific hormone to the endometrium. The response of the latter probably to a certain extent is dependent on the anatomic condition of the uterus. If normal, a typical menstrual flow ensues; if subinvoluted or for other reasons hyperemic (retroflexed), the reaction may be unusually strong; on the other hand, if the uterus is in an atrophic condition, it may require the stimulations from more than one ovulation until it becomes anatomically restored to the degree of resuming its function. As a rule, menstruation continues practically regularly during lactation when once reestablished. The debilitating effect of lactation is obviously dependent on the general condition of the woman. Therefore, usually the disturbance in the equilibrium of body fluids ends sooner and menstruation reappears earlier in the strong and healthy woman. For the same reason the amenorrheic state in general will last longer in the sick or weak woman, in the primigravida, whose labor as a rule is longer and more exhausting, and in the woman suckling a large child. But in the majority of women the equilibrium is regained before they have actually ceased to nurse their children, and, therefore, in the majority of instances menstruation reappears before the function of lactation is ended.

13. Tuffier's Ovarian Graft.—Norton recommends this method for diseases of the ovary. He says it should always be done in idiots, defectives and criminals instead of double oophorectomy. It may also be done in those cases which one wishes to sterilize on account of contracted pelves and other conditions which render child-bearing impossible. Except for the fact that it does not allow pregnancy it fulfils all the requirements of an ideal operation. It can be easily and quickly done. The functions of the ovary, both in internal secretion and menstruation are maintained, and at the same time the ovary is placed in a clean healthy bed completely protected from subsequent attacks of gonorrheal infection. With a new and diminished blood supply sclerosis and cystic degeneration are prevented or retarded.

American Journal of Orthopedic Surgery, Philadelphia

October, XIII, No. 2, pp. 179-344

24 Arthritis Urica. G. R. Elliott, New York.
25 *Quiet Hip Disease. H. L. Taylor and W. Frieder, New York.
26 *Osteochondritis Deformans Juvenalis (Perthes' Disease). N. Allison and E. F. Moody, St. Louis.
27 Limitations of Roentgen Ray in Diagnosis of Certain Bone and Joint Diseases. A. Cotton, Baltimore.
28 Association of Static Disturbances in Children. D. P. Willard, Philadelphia.
29 *Resection of Transverse Process of Fifth Lumbar Vertebra for Relief of Painful Back. W. Blanchard and C. A. Parker, Chicago.
30 *Study of Juxta-Articular Sarcoma. P. W. Roberts, New York.
31 Mechanically Unfit; Study of Type Forms in Chronic Invalids. L. T. Swaim.
32 *Case of Typhoid Spine with Necropsy Findings. J. T. Rugh, Philadelphia.

25. Quiet Hip Disease.—Taylor and Frieder have noticed that certain cases of hip disease, beginning usually in the second quinquennium, run a mild course and progress to an excellent recovery with little or no treatment. These occur in children of good constitution, and in good physical condition, which is not impaired by the hip affection. The invasion is usually mild and insidious, beginning with a slight lameness and often without pain, though moderate pain in the hip, knee or groin is common at some stage of the trouble, and night cries occasionally occur. The child is seldom laid up and usually continues fairly active and goes to school. The authors have observed and studied nineteen cases of this disease, thirteen males and six females; the age at invasion ranged from 4 to 16. In twelve the right, in six the left and in one both hips were affected. In two other cases the roentgenogram showed some thickening of the neck of the second hip, but there were no symptoms. In none of the eight cases tested was there a positive Wassermann. Two patients were tested with tuberculin and both were negative. About half the patients were questioned as to indigestion and constipation, which was always denied. Several of the patients were treated at first for rheumatism; later, most of them were treated by the short spica for varying periods of time; a few had braces, or traction in bed; a number had no treatment. Treatment seemed to exert no effect on the symptoms or course of the disease, except that after immobilization of the hip, pain disappeared in several instances. The only cases of marked stiffness encountered were two boys who had worn spicas for a considerable time; in both of them motion returned. Several of the cases were obviously overtreated and it seems that mechanical treatment is often unnecessary and only moderate restriction of activity advisable. Occasionally, if pain and spasm on motion are present, the short spica for a month or two seems beneficial. Operations are to be avoided. The name "quiet hip disease" is proposed for this clinical entity, the origin of which is as yet uncertain but the recognition of which is easy and important.

26. **Osteochondritis Deformans Juvenalis.**—Allison and Moody are inclined to believe that osteochondritis deformans juvenalis is a disturbance of the line of epiphyseal growth, and that it depends for its typical development on changes in circulation which destroy the balance which exists between the metaphysis and epiphysis in growing bones.

29. **Transverse Process of Vertebra.**—Blanchard and Parker cite a case of impingement of the transverse process of the fifth lumbar vertebra on the posterior wing of the ilium, producing pain, numbness and paralysis of the side and leg, so severe as to cause the patient to become bedridden.

30. **Study of Juxta-Articular Sarcoma.**—Roberts urges that a routine examination be made of cases presenting the symptoms of tuberculosis of the vertebrae or of the bones forming the hip and knee joints and that it should include a search for localized tenderness, pain at the site of the lesion, and careful scrutiny of roentgenograms for peculiarities in the picture. Localized pain in the diseased area which in an early case is unrelieved by immobilization is significant of some pathologic process other than tuberculosis. The appearance of unusual shadows in roentgenograms of a clinically tuberculous osteitis is sufficient reason for withholding a positive diagnosis of tuberculosis. Rapid bone changes shown by roentgenogram taken at frequent intervals are suggestive of sarcoma. The disappearance of pain when a part is immobilized, especially when the hip is concerned, does not exclude sarcoma, even though persistent pain in spite of immobilization argues strongly in favor of it. Localized tenderness about the area of disease, especially in spine and hip cases, may be regarded as confirmatory evidence of sarcoma if other factors point in this direction. Age of the patient, a history of local injury and the presence of tuberculosis in the family or in the patient, are features of little significance in arriving at a differential diagnosis between bone sarcoma and tuberculosis. A previous history of malignant disease relieved by operation should immediately suggest malignancy in the case under consideration. The possibility of sarcoma should always be borne in mind in clinically tuberculous joint conditions exhibiting unusual features. A diagnosis of sarcoma should not be made on any one symptom, but on the coexistence of several factors not usually present in tuberculosis.

32. **Case of Typhoid Spine.**—A portion of the bodies of the second, third and fourth lumbar vertebrae on the ventral surface was excised in Rugh's case. The intervertebral disk between the third and fourth lumbar vertebrae was missing and apparently replaced by a bony overgrowth that closely resembled, grossly, the bony tissues of the vertebral bodies. Sections cut from this point for microscopic study show a complete absence of cartilaginous tissue and a marked overgrowth of, or rather a replacement with, dense connective tissue, which has a rather rich blood supply. This connective tissue bridges the space normally occupied by the intervertebral disk and merges into the body tissue of the body of the third lumbar above and the fourth lumbar vertebra below, sufficient to cause a complete ankylosis.

Annals of Surgery, Philadelphia

October, LXII, No. 4, pp. 385-512

33 Typhoid Perforation. (To be continued.) J. H. Gibbon, Philadelphia.
34 *Treatment of Joint Infections by Lavage and Direct Medication. J. W. Churchman, New Haven, Conn.
35 Acute Gangrene of Gallbladder Following Injury. J. L. Ransohoff, Cincinnati.
36 Situs Viscerum Inversus with Gallstones. H. W. Horn, Wichita, Kan.
37 Carcinoma of Small Intestine. F. H. Lahey, Boston.
38 Dilatation of Duodenum. W. H. Barber, New York.
39 Surgical Physiology of Colon. J. M. Lynch, J. W. Draper, New York, and T. W. Lyon, New Haven, Conn.
40 *Triangle of Petit in Kidney Surgery. H. Crouse, El Paso, Tex.
41 Operative Treatment of Tumors of Bladder. J. A. Gardner, Buffalo.
42 •Suprapubic Prostatectomy in Two Stages. J. Wiener, New York.
43 Case of Primary Tuberculosis of Prostate Gland. I. S. Koll, Chicago.
44 Pathologic Lesions Observed in Posterior Male Urethra by Means of Urethroscope. A. L. Wolbarst, New York.
45 *Mode for Ventrofixation of Uterus for Relief of Prolapsus. J. O'Conor, Buenos Ayres.
46 Tendon Fixation in Infantile Paralysis. W. E. Gallie, Toronto, Canada.
47 Corrective Otoplasty; Report of Two Cases. J. W. Downey, Jr., Baltimore.

34. **Treatment of Joint Infections.**—Churchman has treated by the method of repeated joint irrigation with salt solution followed by staining of the synovial membranes with gentian violet, a small number of streptococcus and gonorrheal joints. The irrigations are carried out under local anesthesia. The first distention of the joint, before anesthesia can be regarded as established, causes no pain or discomfort whatsoever. The strength of gentian violet used for this purpose has been 1:1,000. Gentian violet in this strength caused no pain or signs of subsequent irritation. In some cases the dye was used in a strength of 1:500. The number of cases treated is small, but, Churchman says, some of them have put the method of lavage and staining to a rather severe test. The results have been sufficiently encouraging to justify a continuance of a study, which is now being carried on in the laboratory of surgery at Yale University and in the wards of the New Haven Hospital. A detailed report is promised later.

40. **Triangle of Petit in Kidney Surgery.**—Crouse's paper deals with a new route for kidney surgery, which, in his experience, has been successful in most pathologic conditions met while dealing with the kidney in a surgical way, and is denominated the triangle of Petit route. By this route the author has removed even a 14-inch kidney, which has been practically destroyed by suppurative degeneration secondary to calculi, and was compelled to cut only slightly the internal and external oblique to gain additional space. On the right side this route can be used for doing appendectomies, and for inspection of the gallbladder and duodenum. The left-sided incision gives access to the tail of the pancreas, the spleen and the splenic flexure of the colon. Crouse has used the triangle of Petit route in over thirty kidney operations in various forms of renal pathology; in several cases the duodenum has been inspected, the upper fourth of which is readily brought to view, when the retroperitoneum is opened and retracted with Payr's broad-bladed retractor or the silver malleable retractor so commonly used for exposing deep cavities. The gallbladder can be drained and even removed, as was done by the author in the case of an old person suffering with a gangrenous condition of the gallbladder. When the lateral position is maintained in bed after operation, this incision gives an ideal line for drainage.

45. **Ventrofixation of Uterus for Relief of Prolapsus.**—The operation described by O'Conor endeavors to restore the cervix to its position by fixing it to the recti muscles in the following manner: The abdomen is opened by the usual low central incision and the uterus exposed, any coexisting adnexal disease or adhesions are dealt with, the uterus is then drawn well up into the wound, and a transverse incision is made through the uterine peritoneum just above and parallel to the uterovesical peritoneal reflection (corresponding to the preliminary uteroperitoneal incision in hysterectomy). The peritoneum, with bladder, is reflected downward and forward until a space about 1 inch square is left denuded on the anterior surface of the cervix. The uterine peritoneum on each side of exposed area is retracted and three strong (eleven day) catgut sutures are passed, about ⅓ inch apart, through the exposed portion of the cervix, and sufficiently deep to obtain a firm grip of the cervical muscular coat. The ends of the sutures are drawn out on each side, respectively, through the recti muscles by a Childe's ligature forceps. Thus the peritoneum is excluded

and the denuded surface of cervix is brought into direct apposition with the recti. In order to avoid subsequent intestinal adhesions at the site of fixation, the parietal wound is closed by tier sutures, the first suture purposely including the uterine peritoneum well above the denuded area.

Arizona Medical Journal, Phoenix

October, III, No. 10, pp. 1-11

48 Nervous Disorders Associated with Pelvic Diseases. G. H. Moody, San Antonio, Tex.
49 Tuberculous Meningitis; Prevalence in Children of Communities Frequented by Tuberculous Health Seekers. R. E. Thomas, Phoenix.
50 Syphilis of Nervous System. H. P. Mills, Phoenix.

Arkansas Medical Society Journal, Little Rock

October, XII, No. 5, pp. 115-137

51 Determinants of Medical Progress. A. C. Shipp, Little Rock.
52 State Hospital for Nervous Diseases. F. B. Young, Little Rock.
53 Diagnosis and Treatment of Incipient Tuberculosis. S. J. Wolferman, Fort Smith.
54 Abscess of Umbilical Vein. E. E. Barlow, Dermott.
55 Posterior Deviations of Uterus. W. B. Center, Garland.

Boston Medical and Surgical Journal

October 28, CLXXIII, No. 18, pp. 647-684

56 Nontuberculous Cases in State Sanatoria. E. Washburn, Rutland.
57 Errors in Diagnosis of Chronic Pulmonary Disease. J. B. Hawes, 2d, Boston.
58 What Constitutes Tuberculosis in Childhood? J. L. Morse, Boston.
59 Shrapnel Bullet in Bladder; Report of Case. D. P. Penhallow, Boston.

Colorado Medicine, Denver

October, XII, No. 10, pp. 281-314

60 Anatomic Consideration of Tumors of Brain with Special Reference to Gliomata. W. T. Councilman, Boston.
61 Record Sheets for Narcotic Drug Book. F. R. Spencer, Boulder.
62 Malingerer. W. M. Ogle, Trinidad.

Iowa State Medical Society Journal, Des Moines

October, V, No. 10, pp. 391-466

63 Influenzal Meningitis; Report of Case. F. A. Ely, Des Moines.
64 Peritonitis. O. J. Fay, Des Moines.
65 Tender Pylorus with Ptosis. E. Grimes, Des Moines.
66 Vaginal Cesarean Section; Report of Four Cases. L. E. Kelley, Des Moines.
67 Fibroma of Stomach. W. McCarthy and D. J. Glomset, Des Moines.
68 Abdominal Pregnancy; Report of Case. H. A. Minassian, Des Moines.
69 Mercury in Brain Syphilis. E. R. Posner, Des Moines.
70 Pregnancy and Tuberculosis. A. C. Page, Des Moines.
71 Sympathetic Ophthalmia. W. W. Pearson, Des Moines.
72 Childhood Susceptibility to Tuberculous Infection. J. H. Peck, Des Moines.
73 Chorio-Epithelioma; Report of Unusual Case. J. C. Rockafellow, Des Moines.
74 Mesenteric Cysts. F. Rosenbladt, Des Moines.
75 Direct Implantation of Motor Nerve on Muscle Tissue (Neurotization). A. Steindler, Des Moines.
76 Congenital Hypertrophic Stenosis of Pylorus; Report of Three Cases. J. T. Strawn, Des Moines.
77 Cerebral Abscess, Probably Primarily Due to Suppurative Tonsillitis. T. B. Throckmorton, Des Moines.

Journal of Biological Chemistry, Baltimore

October, XXII, No. 3, pp. 433-568

78 Spectographic Study of Amino-Acids and Polypeptids. P. A. Kober, New York.
79 Physiologic Action of Some Protein Derivatives. Are Proteoses Prepared from Zein and Gliadin Physiologically Active? F. P. Underhill and B. M. Hendrix, New Haven, Conn.
80 Id. Relation of Racemization to Physiologic Action of Proteins and Proteoses. F. P. Underhill and B. M. Hendrix, New Haven, Conn.
81 Id. Physiologic Action of Vaughan's "Crude Soluble Poison." F. P. Underhill and B. M. Hendrix, New Haven, Conn.
82 *Does Fat Formation Occur in Perfused Kidney? F. P. Underhill and B. M. Hendrix, New Haven, Conn.
83 *Character of Water-Soluble Nitrogen of Some Common Feeding Stuffs. E. B. Hart and W. H. Bentley, Madison, Wis.
84 *Effect of Pituitary Substance on Egg Production of Domestic Fowl. L. N. Clark, Ontario, Canada.
85 Ash of Clam Muscle in Relation to Its Osmotic Properties. E. B. Meigs, Woods Hole, Mass.
86 *Studies in Carbohydrate Metabolism. Influence of Hydrazin on Respiratory Quotient and on Heat Production. F. P. Underhill and J. R. Murlin, New York.
87 Determination of Bile Salts in Urine by Means of Surface Tension Method. G. D. Allen, Minneapolis.
88 *Criticism of Bang and Lewis-Benedict Methods for Estimation of Blood Sugar. R. G. Pearce, Cleveland.
89 Influence of Alkaloidal and Other Narcotic Poisons on Reductase. D. F. Harris and H. J. Creighton, Swarthmore, Canada.
90 *Quantitative Studies on in Vivo Absorption of Iodin by Dog's Thyroid Glands. D. Marine, Cleveland.
91 Nitrogen Excretion of Cat During Purin-Free and Purin-Rich Diet. F. S. Hammett, Boston.

82. **Fat Formation.**—Underhill and Hendrix found that if warm Ringer's solution is perfused through the kidney of the rabbit for a period of twenty-four hours there may be a percentile or an absolute increase in the amount of fat contained in the cortex of the kidney or of the entire organ. These results confirm those of Gross and Vorpahl. Unlike Gross and Vorpahl, who cite these findings as evidence for the formation of fat from protein, the authors believe that the data may be interpreted merely as an expression of the mechanical difficulty of preventing contamination with fat of that portion of material to be analyzed. Doubt is also expressed concerning the influence of the perfusion with Ringer's solution, for a kidney simply suspended in this medium may yield results entirely comparable with those obtained after perfusion.

83. **Nitrogen in Feedingstuffs.**—The data secured by Hart and Bentley show that the "amid" nitrogen of feedingstuffs is largely composed of free amino-acids and peptid linkings. In most cases the nitrogen in these structures constitutes 50 to 70 per cent. of the water-soluble nitrogen. The acid-amid nitrogen is relatively small, seldom exceeding 20 per cent. of the water-soluble nitrogen, and more often being below 10 per cent. Corn stover is an interesting exception, showing approximately 40 per cent. of the water-soluble nitrogen in acid-amid form. The ammonia nitrogen rarely exceeded 5 per cent. of the total water-soluble nitrogen, and in some instances was wholly absent.

84. **Pituitary Feeding and Egg Production.**—Clark's experiments show that feeding of pituitary gland substance (anterior lobe) increased the egg production of hens whose production curve was on the decline. The dosage was effective on the fourth day after the first dose and lasted for several days after the last dose. The hatchability of eggs from dosed parents was increased.

86. **Carbohydrate Metabolism.**—Underhill and Murlin show that the subcutaneous injection of hydrazin into fasting dogs induced an increased rate of carbohydrate combustion as measured by the respiratory quotient. This increased combustion of carbohydrate probably explains the diminished blood sugar content and the disappearance of glycogen from the liver and muscles observed in previous communications. Subcutaneously introduced dextrose is oxidized more rapidly in dogs that have received hydrazin than in the normal fasting animal. Such injections of sugar to hydrazinized dogs also appear to exert a specific dynamic action. Hydrazin exerts no specific influence of heat production.

88. **Blood Sugar Estimation.**—The method worked out by Pearce is as follows: Two c.c. of blood are added to 19 c.c. of water; 10 c.c. of dialyzed iron and 1 c.c. of saturated sodium sulphate solution are now added and the solution is filtered. Two c.c. of the clear filtrate are taken for estimation by the modified Bang method. This is treated with 10 c.c. of saturated solution of potassium chlorid and 1 c.c. of Bang copper solution, in a 25 c.c. Jena flask, on the neck of which a rubber tube is drawn. The flask is placed in an oil bath heated to 140 C. and left there for exactly five minutes. At the end of this period the rubber tube is clamped off with a hemostat. When cool, CO_2 is introduced to fill the vacuum which has been made by the condensation of the steam, and the solution is titrated in an atmosphere of CO_2 with N/100 iodin solution, starch being used as an indicator. A solution made up with pure water in place of sugar solution will give a reduction equal to 0.2 c.c. of iodin. For this reason, 0.2 c.c. is subtracted from all titration results. The value of the iodin in terms of sugar is obtained before each series of titrations by the method above outlined.

90. **Iodin in Thyroid Gland.**—Marine's experiments emphasize the extraordinary affinity of the thyroid tissue for iodin. When one considers that as high as 18.5 per cent. of a given intake of iodin by mouth may be recovered from a thyroid

whose ratio to the body weight is as 1:687, it stands alone at present among the specific affinities of tissues for inorganic substances. The results further emphasize the fact that maximum thyroid effects are induced by minimum amounts of iodin. The amount of a given intake absorbed depends, for the most part, on the size of gland and the existing degree of hyperplasia or the degree of saturation with iodin at the time of its administration.

Journal of Nervous and Mental Disease, Lancaster, Pa.

October, XLII, No. 10, pp. 657-720

92 Exact and Inexact Methods in Neurology and Psychiatry. G. W. Jacoby, New York.
93 *Studies on Localization of Cerebellar Tumors. E. G. Grey, Boston.

93. **Localization of Cerebellar Tumors.**—The purpose of Grey's paper is to discuss the importance of staggering gait, limb ataxia, the Romberg phenomenon, and adiadochokinesis in localizing new growths in the posterior cranial fossa. It is based on an analysis of the records of forty-eight cases of tumor which involved the cerebellum either directly, or indirectly by pressure. The diagnosis and localization of the lesion were confirmed in all of the cases either at operation or on postmortem examination. All records have been excluded which showed that the disease had extended into other parts or which included additional factors likely to confuse the symptom complex. There were nineteen cases in which new growths, gliomata, endotheliomata and tuberculomata occupied one or the other cerebellar hemisphere. On examination all showed some degree of the characteristic tottering or drunken gait. There were nine cases in which the tumors gliomata and tuberculomata occupied a central position in the cerebellum, namely, they involved the vermis and to some extent the neighboring portions of the lateral lobes. In one the gait remained unaffected. Of twelve patients with lesions in one or the other lateral recess, endotheliomata and cysts, one had an apparently normal gait. In the remaining eleven the usual uncertainty was evident. Of three cases of median tumors posterior to the cerebellum, two ependymal gliomata and one angioma, the gait remained unaffected in one.

The Romberg test was used in sixteen patients with unilateral, intracerebellar tumors. Of these, four fell or tended to fall toward the affected side. The swaying or falling was chiefly away from the lesion in five cases. In patients with new growths involving the vermis, three fell, or tended to fall, backward. One was equally unsteady in all directions. The remaining cases, seven in number, swayed more toward one side. Of thirteen patients with cerebellopontine new growths the swaying was directed toward the affected angle in six, and toward the unaffected in two. An unsteadiness equally marked in all directions appeared in three cases. In only one instance was a negative Romberg found. The lesion, an ependymal glioma in one of three cases of median tumors posterior to the cerebellum, rested on the medulla and cord, causing flattening of the latter. The Romberg was negative. The other two cases, an angioma and a second glioma, fell principally in one direction. From the data presented it is evident that in considerably over 50 per cent. of the cases the direction of swaying or falling bore no direct relation to the location of the tumor. Accordingly the author believes that it is fair to conclude that while this test is useful in establishing a diagnosis of subtentorial new growths, a swaying toward one or the other side has no real significance in localizing the tumor.

Limb ataxia was studied in eight patients with tumors involving the vermis. In all, with two exceptions, the amounts of ataxia on the two sides were quite dissimilar. No ataxia was discernible in one case of tumors within one hemisphere. While it was equally marked on either side in five (one had little), in ten it appeared coarser on the homolateral, and in two coarser on the contralateral, side. No ataxia was visible in two cases of tumors in the cerebellopontine angle; in a third it appeared equally marked on the two sides. Of the thirteen members of this group, ten exhibited more incoordination in the limbs of one side. Very little ataxia was evident in median tumors posterior to the cerebellum. In one it was entirely absent; in the remaining two it appeared only in the arms and then to a slight degree. Tumors within one hemisphere: there was normal diadochokinesis in two patients. Adiadochokinesis was present in twelve cases. In three it appeared equally bad on the two sides and in nine more marked on the side containing the new growth. Tumors involving the vermis: two patients exhibited no adiadochokinesis in either limb. In a third it was present, but to an equal extent on the two sides. A unilateral adiadochokinesis was noted in the remaining four cases of the group. In two of these the tumors encroached more on one of the hemispheres than on the other. Tumors in the cerebellopontine angle: of twelve cases with lateral recess tumors four exhibited normal synergic movements. Adiadochokinesis was noted homolateral to the lesion in six.

Journal of Sociologic Medicine, Easton, Pa.

October, XVI, No. 5, pp. 253-348

94 Hospital Organization of Railway Systems. C. W. Hopkins, Chicago.
95 Refrigeration, Transportation and Conservation of Poultry and Fish Products. M. E. Pennington, Philadelphia, and E. D. Clark, Washington, D. C.
96 Infant Mortality and Urban, Housing and Living Conditions. H. H. Hibbs, Jr., New York.

Kansas Medical Society Journal, Topeka

October, XV, No. 10, pp. 299-328

97 Factor of Age in Incidence and Death of Typhoid. W. J. V. Deacon, Topeka.
98 Correlation of Clinical and Serologic Findings in Paresis and Cerebrospinal Syphilis. I. A. Darling, Warren, Pa., and P. B. Newcomb, Osawatomie.
99 Medical Ethics. H. Plumb, Pleasanton.
100 University Health Fee. J. Sundwall, Lawrence.

Lancet-Clinic, Cincinnati

October 16, CXIV, No. 16, pp. 339-365

101 Fractures in Vicinity of Joints. C. E. Caldwell, Cincinnati.
102 Organs of Special Senses in Life Insurance. W. A. Peterson, Chicago.
103 Clinical Study of Stammering. R. Reed, Cincinnati.

October 23, No. 17, pp. 367-386

104 Urinary Calculi. E. O. Smith, Cincinnati.
105 Drug Addictions and Their Treatment. T. D. Crothers, Hartford, Conn.
106 Social Service Handicraft Shop. N. Ryan, Cincinnati.
107 Blindness After Salvarsan Therapy, Optic Atrophy, Atypical Psychosis. C. E. Kiely, Cincinnati.

Medical Record, New York

October 30, LXXXVIII, No. 18, pp. 727-768

108 Habit and Malocclusion. G. V. N. Dearborn, Cambridge, Mass.
109 Comparative Mortality Experience Among Abstainers and Nonabstainers from Alcohol. W. E. Porter, New York.
110 Dementia and Multiple Tuberculous Brain Abscesses. G. B. Hassin, Chicago.
111 Infectious Diseases of Intramural Insane; Their Prevention and Treatment. J. A. Jackson, Philadelphia.
112 Lime Therapy of Diabetes. M. Kahn and M. H. Kahn, New York.
113 Treatment of Opium or Morphin Addiction. S. T. Rucker, Memphis, Tenn.

Military Surgeon, Chicago

October, XXXVII, No. 4, pp. 311-410

114 Lessons of Great War. J. R. Kean, U. S. Army.
115 Auto-Truck Couplings for Escort Wagons. F. W. Hendley, Ohio N. G.

New York Medical Journal

October 30, CII, No. 18, pp. 881-928

116 An Eighteenth Century Quack in French Canada. W. R. Riddell, Toronto, Canada.
117 Pituitary Extract. S. W. Bandler, New York.
118 Case of Filariasis Associated with Schistosomiasis. R. C. Rosenberger, Philadelphia.
119 Hypopituitarism; Report of Two Cases. L. N. Boston, Philadelphia.
120 Status Thymicus Associated Probably with Inferior Thyroid Lobe. H. A. Houghton, Bayside.
121 Effect of Smoking on Circulation. J. Aikman, Rochester.
122 Eye in Diagnosis. W. F. C. Steinbugler, New York.
123 Treatment of Horse Asthma by Repeated Injections of Normal Horse Serum. L. A. Levison, Toledo.
124 Anesthetic Risk in Surgery. T. L. Dagg, Chicago.
125 Infant Drug Addicts. P. M. Lichtenstein, New York.
126 *An Unusual Complication of Acute Appendicitis. M. B. E. Sutton, New York.

126. **Complication of Acute Appendicitis.**—When first called, Sutton found the patient suffering from intermittent colicky abdominal pain; abdomen tympanitic; temperature and pulse

normal. No abdominal tenderness. Gave soapsuds, enema, liquid diet, castor oil, 1 ounce. Diagnosis: Acute intestinal indigestion. At 4 p. m., temperature, 100; pulse, 90, and of good quality; pain, as before; slight localization of pain over McBurney's point. Abdomen slightly tympanitic. Return of enema good, constipated mass. Treatment: Ice bag to right iliac fossa, liquid diet. Diagnosis: Acute appendicitis. Five a. m. next day: patient suffering with sharp shooting pains in vulva, in addition to abdominal pains, still same character as before. Catheterized and obtained 4 ounces clear straw colored urine. Temperature, 102; pulse, 110, weak and compressible; marked tenderness over McBurney's point; *slight rigidity* of right rectus. On consultation immediate operation advised. On operation, Sutton found at the distal end of the appendix a ruptured abscess, firmly *adherent to the posterior* wall of the bladder, and a beginning *peritonitis*. *As the vulva* and bladder are supplied in part by the sacral plexus, it is easy to understand why such a complicating symptom should arise. The diagnosis was also *complicated* by the ovarian pain. A bimanual examination was not *advisable as the patient* was a virgin. Sutton believes the symptom of a sharp shooting pain in the vulva to be *diagnostic* of an adhesion of the posterior wall of the bladder.

Pennsylvania Medical Journal, Athens

October, XIX, No. 1, pp. 1-64

127 *Civic Responsibility of Physician and Medical Society. J. B. McAlister, Harrisburg.
128 Significance of Bladder Symptoms in Presence of Diseases of Female Pelvic Organs. F. E. Keene, Philadelphia.
129 Pennsylvania's Relation to Industrial Safety and Health. J. P. Jackson, Harrisburg.
130 Programs. H. W. Albertson, Scranton.
131 Live Wire Secretary. S. C. Smith, Hollidaysburg.
132 Secretary-Editor; Two in One. J. B. Carrell, Hatboro.
133 Results of Examination of Cultures from Suspected Cases of Diphtheria and Other Pharyngeal and Nasal Conditions. G. R. Moffitt, Harrisburg.
134 Uveitis. G. B. Jobson, Jr., Franklin.
135 Intrarectal Use of Sodium Salicylate in Uveitis. J. F. Klinedinst, York.
136 Internal Medication in Treatment of Catarrh of Upper Respiratory Tract. G. R. S. Corson, Pottsville.
137 Management of Breast Feeding; Case Reports. C. K. Johnson, Burlington, Vt.
138 Some Common Mistakes in Interpretation of Laboratory Reports. F. H. Harms, Chicago.

127. Abstracted in THE JOURNAL, Oct. 9, 1915, p. 1303.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

September, XXIII, No. 9, pp. 257-284

139 Tuberculosis. T. Y. Hull, San Antonio, Texas.

West Virginia Medical Journal, Wheeling

October, X, No. 4, pp. 109-144.

140 Limitations of Local Anesthetics in Anorectal Surgery. S. G. Gant, New York.
141 Diagnosis and Treatment of Chronic Laryngitis. G. A. Aschman, Wheeling.
142 Extraperitoneal Cesarean Section. R. J. Reed, Wheeling.
143 Dislocations of Hip Joint. C. S. Hoffman, Keyser.
144 Inunction Therapy in Infancy and Childhood. E. B. Gerlach, Huntington.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

October 9, II, No. 2858, pp. 525-556

1 Value of Hypochlorous Acid in Treatment of Cases of Gas Gangrene. J. Fraser.
2 Hospital Ship in Mediterranean. H. Chitty.
3 Acute Renal Disease Among Troops in France. R. G. Abercrombie.
4 Importation of Bacillary Dysentery. A. E. Carver.
5 Case of Molluscum Fibrosum. A. W. Gill.
6 Two Cases of Acute Actinomycosis of Parotid Gland. E. D. Telford.

China Medical Journal, Shanghai

September, XXIX, No. 5, pp. 287-366

7 *Splenomegaly; Report of One Hundred and Four Cases Met with in South China. G. D. Whyte.
8 *Splenectomy in Kala-Azar. S. Cochran.
9 Continued Fever of Korea. H. H. Weir.
10 Roentgen-Ray Experiences in Mission Hospital. A. F. Cole.

7. **Splenomegaly.**—Half the cases seen by Whyte occurred between the ages of 16 and 25 years, when *the patient* became aware of a lump in the position of the spleen. Forty per cent. told of relatives who were suffering from enlarged spleen, etc., but it was noted that this percentage varied with the district *from* which the patient came, namely, eighteen patients were distributed over three districts and only three of these (17 per cent.) had relatives affected, whereas of thirty-eight patients who came from one single district, in as many as twenty-four cases (*63 per cent.*) at least one relative was affected. The duration of illness up to the time the patient came to the hospital varied between a few months and (in one case only) thirty years. In 28 per cent. of the cases the illness had lasted for ten or more years. Eighty-eight per cent. of the patients remembered having had attacks of fever, and in two thirds of these cases the form of infection was either simple or double tertian, the remainder being cases of quartan fever. Edema or ascites had been present, or was found when the patients *came to* the hospital, in 62 per cent. of the cases. Hemorrhage usually from the bowel or the nose was recorded in 61 per cent. of the cases. Diarrhea was recorded in 50 per cent. of the cases. The erythrocytes varied in number from two and a *half* to four millions per cubic millimeter in more than half the cases. The majority of the remaining cases showed between four and five millions, though a few (11 per cent.) had less than two and a half millions. The color index varied *in different* cases from 0.6 to 1.3, but in two thirds of the cases it did *not* exceed 0.9. Nucleated red cells were found in one half the cases whose total red count was less than two and a half million, and in only 6 per cent. of the cases with *more* than four million cells. In the intermediate group normoblasts were found *in 30 per cent. of the cases.* Poikilocytes were noted in 27 per cent. of the cases examined. Two thirds of the cases had less than 3,000 white cells. The percentage of polynuclears varied from 40 to 80 per cent.; 89 cases having between 55 and 75 per cent.

8. **Splenectomy in Kala-Azar.**—Following *removal* of the *spleen in* three cases Cochran says the *patients showed* an immediate and marked increase in hemoglobin and the leukopenia was abolished, there being a tendency to a moderate leukocytosis. One *patient survived only* seventeen days. The other two are now in considerably better health than before the operation. In one *of them* the liver was shrunk to normal size from a *previous marked hypertrophy.* Both have *added weight.* The temperature curve in both is more nearly normal than before the *operation*. Parasites are still easily found, though in one of the cases the number seems smaller.

Dublin Journal of Medical Science

October, III, No. 526, pp. 241-320

11 Pituitary Extract with Special Reference to Its Action During Pregnancy and Labor on European Women. R. Johnson.
12 Minor Ailments; Their Importance in Warfare. W. F. Evans.

Edinburgh Medical Journal

October, XV, No. 4, pp. 241-304

13 Miliary Aneurysms in Relation to Cerebral Hemorrhage. T. Shennan.
14 Case of Myxedema. J. Miller.
15 Case of Bronchopneumonia, Purulent Otitis Media and Interna and Leptomeningitis; Postmortem; Microscopic Examination of Ear. J. Thomson and J. S. Fraser.
16 Case of Subacute Purulent Otitis Media, Labyrinthitis and Purulent Leptomeningitis Due to Capsulated Streptococcus; Spontaneous Recovery. J. S. Fraser and J. L. Owen.
17 Case of Myxedema, with Tetany and Suprarenal Insufficiency. J. Eason.

Journal of Tropical Medicine and Hygiene, London

October 1, XVIII, No. 19, pp. 217-228

18 Babesia or Piroplasma. A. J. Chalmers and R. G. Archibald.
19 *"Boomerang Leg"; Bone Disease Occurring Among Australian Aboriginals. A. Breinl and H. Priestley.
20 Flagellate Forms of Leishmania Donovani in Tissues of Experimentally Infected Dog. C. M. Wenyon.

19. **"Boomerang Leg."**—This *disease* has for sometime been known as "boomerang leg," on account of *the* similarity of the shape of the legs to that of a boomerang. *It affects* young

natives of both sexes and the resulting deformity persists throughout their life, and in every case seen both legs were affected. The onset seems to be gradual; the children complain at first of pains in the shins, sufficiently severe to prevent them from walking. The skin over the tibia is tender to pressure, but there is no swelling noticeable. These pains become less severe in the course of time, the children begin to use their legs again, and the tibiae and fibulae bend forward gradually and assume the characteristic shape. In consequence of this the center of gravity of the body is displaced forward, the patient becomes flatfooted, and the gait shuffling. The deformed bones gradually increase in thickness, but retain their altered shape. The history of the disease in conjunction with the appearance of the bone suggests that "boomerang leg" is the result of a chronic osteomyelitis of both tibiae. It takes, at first, the form of a rarefying osteitis, corresponding clinically to the early and painful stages of the disease and giving rise to the softening of the bone and the characteristic deformity. This phase is followed later by a condensing osteitis, in cases in which the increased activity of the osteoblasts leads to a progressive thickening of the lamellae, to bony metaplasia of the fibrosed marrow, and to the reduction of the marrow spaces. A simultaneous progressive periosteal new development causes the increase in the thickness of the shaft. The etiology of "boomerang leg" is unknown, but syphilis and tuberculosis can be excluded.

Lancet, London

October 9, II, No. 4806, pp. 795-846

21 Science and War. W. Osler.
22 War and Medical Education of Women. F. E. Willey.
23 *Spasmodic Symptoms in Rheumatism. F. J. Poynton.
24 Amputation by Plane Circular Section. G. A. Wright.
25 *Radical Treatment of Septic Compound Fractures. V. Pennell.
26 *Intestinal Drainage in Septic Peritonitis. A. J. Nyulasy.
27 Significance of Pulsus Alternans and Some Other Forms of Uneven Pulse. A. E. Carver.
28 Case of Complete Branchial Fistula in Adult. C. H. Whiteford.

October 16, No. 4807, pp. 847-900

29 Ethics and Law of Drug and Alcohol Addiction. W. J. Collins.
30 *Clinical Characteristics of Cases Treated as Paratyphoid. H. Robinson.
31 Explanation of Recto-Urethral Anomaly and Some Points in Normal Anatomy. F. W. Jones.
32 Etiology and Prevention of Cerebrospinal Fever. H. Sutherland.
33 Cases of Transient Aphasia, Hemiplegia and Hemiparesis Due to Arterial Spasm. J. G. Sharp.
34 Labor Complicated by Eclampsia and Glucosuria; Cesarean Section; Recovery. C. P. White.
35 Roentgen-Ray Treatment of Fungating Epithelioma with Introduction of Progressive Filtration. C. Kempster.
36 Case of Empyema Following Poisoned Arrow Wound; Natural Cure by Absorption. J. F. Corson.
37 Case of Twin Ectopic Pregnancy. G. W. Johnson.
38 Employment of Bandages for Irrigation of Wound Surfaces with Therapeutic Solutions and Draining of Wounds. A. E. Wright.

23. **Spasmodic Symptoms in Rheumatism.**—Among the symptoms discussed by Poynton under this head are migraine, muscular spasm, paroxysmal sensory symptoms and anginal attacks. He points out that a damaged heart is made worse by an acute rheumatic attack; then the development of attacks of cardiac pain, becoming at times frequent; steady increase in the predominance of symptoms of a functional or hysterical character; remarkable intervals of freedom; and a final abrupt termination of the illness, as was well illustrated in a case cited by Poynton. The necropsy showed a large heart (27 ounces); the pericardium was generally adherent. There was myocardial fibrosis with endocardial thickening of the membrana septi, and old-standing thickening of the aortic and mitral valves. The aorta, the openings of the coronary vessels, and the coronary vessels themselves were not apparently diseased. An electrocardiogram taken at a time when the attacks were frequent [illegible] demonstrated that there was hypertrophy of the left ventricle. Irregularities of rhythm were conspicuous by their absence throughout.

25. **Treatment of Septic Compound Fractures.**—The method of treatment adopted by Pennell is to make a large incision over the site of the fracture, define the ends of bone, remove any small detached portions of bone and shrapnel, and after placing the two or more main fragments in position, either fix them with a Lane's plate, suture them with silkworm gut, or, in cases in which there is much loss of bone, transpose a graft from the tibia or fibula. If the condition is fairly clean Pennell sews up the muscle and fasciae, leaving only a small rubber drain down to the plate. If it is septic he makes no attempt to "bury" the plate or fixing apparatus. Active antiseptic treatment is instituted.

26. **Intestinal Drainage in Septic Peritonitis.**—The rational treatment of this toxemia in Nyulasy's opinion is the removal of unabsorbed intestinal toxin and the prevention of its further production. Both these ends may be secured by intestinal drainage, provided the peritoneal cavity is not charged with excessive poison and that the focal factor is eliminated. The following is a summary of Nyulasy's treatment: If the focal factor has been eliminated, free toxic fluid mopped away, septic necrotic areas drained, the Fowler position employed, saline freely administered, and early purgation given a trial, but the patient nevertheless continues to deteriorate from toxemia due to paralytic ileus, then intestinal drainage should be instituted. If, at the primary operation, drainage of the septic focus in the abdomen has not been employed and the patient deteriorates, a drainage tube may now be introduced; if the patient does not then rapidly improve, but continues to go down hill, intestinal drainage may now be instituted under local anesthesia. If, when the patient is first seen, the evidence of toxemia from paralytic ileus is positive, and especially if lividity is obvious, then intestinal drainage should form part of the primary operation.

30. **Cases Treated as Paratyphoid.**—Paratyphoid (A and B) in the British expeditionary force, according to Robinson's observation, is a disease much shorter and milder than typhoid, as met with in civilian practice and in the South African campaign. Its onset may be gradual or moderately sudden. Headache and abdominal pain are the most constant symptoms. Shiverings at the onset; cough, pains in the limbs and back, diarrhea, constipation, nosebleeding are the next commonest symptoms; all these are met with in about 30 to 60 per cent. of cases. Vomiting at onset and sore throat later are by no means rare. Definite rose spots in successive crops are found in about 60 per cent. of cases. The abdominal reflex is absent in rather under 50 per cent. The pulse rate is extraordinarily slow, even more so than in typhoid. Relapses of brief duration are not uncommon. Several complications occur more rarely and are the counterparts of those associated with typhoid. The paratyphoid bacillus (A or B) is frequently isolable from the feces, but in many cases not until after the symptoms have subsided; one negative finding should not be accepted as conclusive. It is also occasionally isolable from the blood, urine and from metastatic abscesses. Distinct help in diagnosis is obtainable from repeated quantitative Widal reactions, but much experience is required for their interpretation, and they must be read in conjunction with the clinical evidence and with the history of previous inoculation. On the assumption that this disease is of the enteric group, the same precautions as in the case of true typhoid are indicated against its spread. In particular, carriers must be watched, for bacilli may be present in their urine and feces after all symptoms of illness have subsided.

Bulletin de l'Académie de Médecine, Paris

September 28, LXXIV, No. 39, pp. 325-339

39 Suture of the Bone after Gunshot and Shell Wounds. (La suture osseuse dans les suites de plaies de guerre.) C. Dujarier.
40 *Efficacy of Magnesium Chlorid in Dressing Wound. (Etude des effets thérapeutiques du chlorure de magnésium.) Rosenblith.
41 Vaccination against Typhoid Reduces Mortality by Two-Thirds at Least. L. Bernard.

40. **Magnesium Chlorid in Therapeutics.**—Rosenblith relates clinical experiences which have led him to the same conclusions as to the efficacy of magnesium chlorid that Delbet has reached by experimental research. Rosenblith gave it by subcutaneous injection in April, 1913, to relieve a very painful case of deforming rheumatism, and the results were extremely encouraging. In the last few months he has been using it

in dressing wounds, and with most excellent results. It seems to increase the opsonic index and generate substances antagonistic to proliferation of bacteria.

Lyon Médical, Lyons

CXXIV, No. 1, pp. 1-36

42 *Giant Magnet for Localizing and Extracting Metal Foreign Bodies in the Tissues. (Emploi de l'électro-aimant géant dans la recherche et l'extraction des corps étrangers magnétiques.) L. Léorat.

No. 2, pp. 37-72

43 Conditions Favoring Restoration of Function in Severed Nerve. J. P. Morat.

No. 3, pp. 73-108

44 Roentgen Localization of Foreign Bodies. Lagoutte.
45 *The Mineral Mud and Brine Baths at the Health Resorts on the Black Sea. (Les limans de la mer noire.) E. Barral. Commenced in preceding volume.
46 *Blister Cupping. (Ventouses vésicantes.) P. Aubert.

No. 4, pp. 109-144

47 Early Diagnosis of Cerebrospinal Meningitis. E. Weill.
48 Glossolaryngeal Scapulopharyngeal Hemiplegia from Shrapnel Bullet. (Nouveau syndrome paralytique pharyngo-laryngé par blessure de guerre.) Collet.

42. **Magnet for Extraction of Foreign Bodies.**—Léorat relates that the first known use of the magnet for extraction of a scrap of metal in the tissues dates from two thousand years before Christ, as recorded in one of the Vedas, the book of the Brahmins. The eye infirmary at Lyons has been fitted up as a base hospital, and the giant magnet, designed to extract scraps of metal from the eyes, has been found very useful in locating and extracting scraps of shells and bullets in the seat, thigh, neck and back, as well as in the eyes. One man had been showered with small scraps from an exploding shell, and many of them buried deep in the tissues were drawn out by the magnet alone. At one point five scraps were thus extracted through the single hole through which they had entered. In two other cases a piece of a needle or pin was thus drawn out. He gives some illustrations which show how the size, shape and depth of the foreign body can be approximately estimated from the shape of the protuberance that forms above it when the magnet is applied to the region. The more of a peak, naturally, the nearer to the surface. The base of the protuberance should be outlined; it is circular if the needle, for example, stands perpendicular; it is an ellipse if the needle lies parallel to the skin, and it is egg-shaped if the needle lies slanting. Bird shot is often made of iron, and hence is magnetic, and nickel-coated bullets also respond to the magnet. He suggests the possibility of making a magnet long and thin that might be introduced into the esophagus, stomach or air passages, and thus draw out metal foreign bodies.

45. **Mud and Brine Baths.**—This long study of the "limans" of the Black Sea concludes with Borisoff's warning that acute diseases should never be given treatment with mineral mud or brine baths as they are exclusively for chronic affections. In his experience with over 10,000 patients taking the baths, he found that the chronic affection always showed a phase of aggravation under the influence of the baths. That is to say, the chronic affection developed an acute phase, and the defensive forces then rallied better and often conquered the trouble without further ado. The technic, therefore, of the mud and brine baths health resorts in question aims to transform a chronic into an acute affection. The strength of the patient must be sustained, all depressing factors avoided, and constant medical supervision is imperative, especially when the nervous or cardiovascular system is impaired. Two diabetics taking the mud baths without medical advice developed fatal coma.

46. **Blister Cupping.**—Aubert expatiates on the benefit from revulsion in pulmonary edema, and relates that he has thus tided an elderly physician of 75 through repeated attacks of pulmonary edema during the last three years. The drawbacks of cantharidin blisters are avoided by using an ordinary tumbler, with a lighted, crushed up piece of newspaper inside, applied to the skin in the dorsolumbar region. The tumbler is pressed firmly into the skin and left there for an hour and a half or two hours. Multiple blisters form under it, and they continue to secrete for about a week. He has had no opportunity to apply the measure in affections other than pulmonary edema, but it works so well in this that he would not hesitate to use it for congestion of the lungs or viscera, and attacks of pain in the kidney, along the sciatic nerve or elsewhere. The cupping glass does not get so good a hold on the abdomen as on the back; the secret of success is a good hold and an hour and a half to two hours' application. He has his patients with pulmonary edema sit up in a comfortable arm chair, with several shawls thrown over the legs and trunk, or a wide dressing gown that can be readily drawn out of the way, to permit this cupping blister revulsion.

Paris Médical

V, No. 1, pp. 1-16

49 *Partial Tetanus. V. Courtellemont.
50 Technic for Massage after Wounds in War. H. Somen. Concluded in No. 5.
51 *Exercise and Massage in Treatment of Dermatitis Persisting after Wounds in War. F. Debat.

Nos. 2-3, pp. 17-76. Ambulance and Field Hospital Number

52 *Collection and Care of the Wounded on the Firing Line. C. Dopter and Others.

No. 4, pp. 77-92

53 Organic Paraplegia from Shell Explosion without External Wound; Five Cases. L. Heitz.
54 Localization of Projectiles in the Tissues. A. Weil.

No. 5, pp. 93-108

55 Epidemic Tetragenemia; Thirty-Five Cases. F. Trémolières and P. Loew.

49. **Partial Tetanus.**—Courtellemont's patient was a man of 65 who developed attenuated partial and chronic tetanic contracture of the leg after he had stepped on the tooth of a rake and inflicted a slight wound. The first symptoms were observed about fifteen days after the accident, and except for a slight and transient tendency to trismus the disturbances were apparently merely a spastic monoplegia. A painful cramp sometimes developed in the leg and foot affected when he tried to move them. Under epidural injections of antitetanus serum and chloral the symptoms gradually subsided to a complete cure by the end of the sixth week. In connection with this case Courtellemont discusses the literature on partial and atypical tetanus, emphasizing that however unusual the combination or sequence of symptoms, the underlying tetanus is the same disease in all and requires the same treatment.

51. **Massage and Exercise in Treatment of Skin Affections Persisting After Wounds.**—Debat relates that in many cases the dermatitis was the result of corrosion from the antiseptics used in dressing the wounds or of maceration from a moist dressing with boiled water. The tissues become so torpid that they show no inclination to heal. The injury of nerves and vessels in the region may cooperate in the delay in the healing of the dermatitis as also the immobilization of the part. Both of these factors are combated by intermittently stimulating the skin with a 9 per thousand salt solution and exposing the region to the air, as soon as possible having the muscles massaged and exercised. He reports some typical cases showing the rapid healing under such measures of dermatitis long resisting ordinary treatment.

52. **Ambulance and Hospital Number.**—This large number is profusely illustrated and describes and shows the ambulances at work, the hospitals and dressing stations, base hospitals, etc., the sanitary trains, the stretchers in use and the dogs trained to seek for the wounded. The last two of the twelve articles by various writers are descriptions by Camus of the physiotherapeutic institutes at Paris and by Claude of the regional neurologic centers which have been established at various points. Claude states that specialist care and hospital treatment for the neurologic cases has been organized at several points in Paris, and at Lyons, Bourges, Bordeaux, Toulouse, Nancy, Rennes, Marseilles, Nantes and Tours. Other regional neurologic hospitals are to be installed as needed, the results having abundantly proved their usefulness.

Archiv für Kinderheilkunde, Stuttgart

LXIV, Nos. 5-6, pp. 321-472. Last indexed June 5, p. 1948

56 The Bacillus of Whooping-Cough. (Keuchhustenbacillus—Bordet-Gengouschen Bacillus.) I. Jacobsen and A. H. Meyer (Copenhagen).

57 Influence of Summer Vacation on Mortality from Diphtheria and Scarlet Fever. L. Bernhard.

58 Paralysis with Whooping-Cough; Four Cases. (Lähmung bei Keuchhusten.) S. T. Sörensen (Copenhagen).

Deutsches Archiv für klinische Medizin, Leipzig

June 22, CXVII, Nos. 4-5, pp. 361-496. Last indexed Sept. 18, p. 1062

59 Localization by Electrocardiography of Source of Impulse for Heart Action. (Ortsbestimmung der Erregung im menschlichen Herzen mit Hilfe der Elektrokardiographie.) G. Fahr and A. Weber.

60 Variations in Functioning of Respiration Center, especially during Sleep. (Alveolargasanalysen. I.) H. Straub.

61 *Changes in Regulation of Respiration under Psychic and Pharmacologic Influences. (Alveolargasanalysen. II.) K. Beckmann.

62 *Eosinophil Myocarditis. (Untersuchungen über die Herzmuskulatur bei Infectionskrankheiten. I.) E. Liebmann.

63 Sparing of Nitrogen in Man under Intake of Ammonia Salts and Urea. (Stickstoffersparnis durch Darreichung von Ammoniaksalze und Harnstoff.) E. Grafe.

64 The Leukocytes after Vaccination against Typhoid. H. Stieve.

65 Galvanic Excitability of Dying Muscles. (Beitrag zu den Theorien der elektrischen Entartungreaktion.) E. Reiss.

July 20, No. 6, pp. 497-618

66 Daily Fluctuations in the Carbon Dioxid Tension of the Alveolar Air and Their Causes. (Alveolargasanalysen. III.) H. Erdt.

67 Gaseous Interchanges in Human Muscle in Action. (Alveolargasanalysen. IV.) M. Mettenleiter.

68 Determination of Pepsin and Trypsin in Fasting Stomach. G. Dorner.

69 *Dangers of Iodin Medication. A. Oswald (Zurich).

70 Study of the Reaction of Degeneration. (Ueber die Nutzzeit degenerierender Muskeln: Zur Erklärung der Entartungsreaktion.) W. Achelis and M. Gildemeister.

71 *Chilling Causes Coagulation of Fibrin in the Blood Stream. (Das Wesen der Erkältung.) Aufrecht.

61. **Influence of Emotions and Drugs on the Carbon Dioxid Tension of the Alveolar Air.**—Beckmann found that emotional factors had a depressing influence. This must entail a drop in the concentration of hydrogen ions throughout the entire body. This in turn must affect the functioning of numerous organs. Certain drugs are able to influence the tension, morphin increasing and cola reducing it.

62. **Eosinophil Myocarditis.**—Liebmann found accumulations of eosinophil elements in the myocardium at necropsy of a girl of 12 who had succumbed to diphtheria. The findings in the heart muscle were like those Stäubli and Hübner have reported from cases of trichinosis. Tanaka in 1912 reported eosinophils as a constant finding in four out of fifteen diphtheria hearts, but never in such profusion as in the case here described, with a colored plate. In this case the eosinophils were grouped also in such a way as to suggest that the affection represents a new and rare type of diphtheritic myocarditis. Destruction of muscle tissue cannot be the only factor involved. Liebmann is making a special study of the heart in infectious diseases, and this first communication is to be followed by others.

69. Practically the same article was summarized in these columns, November 6, p. 1682.

71. **Mechanism of Injury from Getting Chilled.**—Aufrecht presents an imposing array of testimony culled from old and modern writers to reaffirm the important part played by getting chilled in the genesis of various diseases and morbid processes. He then reports various experiments on rabbits, all of which confirms his assumption that the chilling causes coagulation of fibrin in the blood stream in the part chilled. The cause of the coagulation is the injury done to the white corpuscles by the cold. The coagulation obstructs the flow through the peripheral vessels involved and the blood is liable to back up into the liver, kidneys and gastric mucosa. The most striking changes were found in the lungs, the coagulation of fibrin entailing microscopic hemorrhage into the interstitial tissue. This occurred in a pronounced form when the hind part of the rabbit was thrice dipped into ice water for ten minutes. The blood chilled in this way passes in the directest way to the arterial circulation in the lungs. The obstruction of vessels by the coagulated fibrin after chilling may be transitory and harmless, but, on the other hand, it may provide a culture medium for germs and explain pneumonia developing after exposure to cold. The hyperemia in the internal organs may also cooperate in the disturbances following chilling.

Deutsche medizinische Wochenschrift, Berlin

September 30, XLI, No. 40, pp. 1177-1204

72 The Spleen in Diagnosis of Typhoid. (Impf-Milzschwellung und Typhusdiagnose.) Goldscheider.

73 *Dysentery. (Ueber Ruhr und ihre Behandlung im Felde.) C. Hirsch.

74 Pseudodysentery. (Y-Ruhr.) E. Fränkel.

75 Bacteriologic Diagnosis of Cholera. W. Schürmann and T. Fellmer.

76 *Abortive Forms of Cerebrospinal Meningitis. H. Hochhaus.

77 Further Favorable Reports on Radiotherapy of Cancer. (Zur Verhütung von Nebenschädigungen bei der Behandlung tiefliegender und tiefgreifender Karzinome mit Radium und Mesothorium.) B. Krönig.

78 Gas Phlegmons of Varied Bacteriologic Origin. H. Selter.

79 Wounds of the Eyes. (Bemerkenswerte Fälle von Verwundung des Sehorgans.) Oloff. Commenced in No. 38.

80 Rapid Healing of Wounds Left Exposed to the Air. (Ueber offene Wundbehandlung.) H. Weissenberg.

81 The Blood Count and Differential Staining in Counting Chamber. (Zur Blutkörperchenzählung und zur Differentialkammerfärbung.) G. C. van Walsem.

73. **Treatment of Dysentery.**—Hirsch reviews the general principles for prevention and treatment of dysentery, and emphasizes that there are not only severe infection and intoxication but serious lesions in the lining of the bowel, and the patient is suffering likewise from lack of water, lack of nourishment, and from the constant draining away of salts. All of these should be regarded in treatment. He advocates one or two tablespoonfuls of castor oil daily at first, supplemented after a few days with repeated small doses of calomel. He has found rectal injections of kaolin or of animal charcoal (one heaping tablespoonful to a liter of warm salt solution) effectual in reducing tenesmus. He generally makes the injection at night and then gives a little opium to ensure a few hours' rest. He does not approve of either kaolin or charcoal by the mouth; they adsorb the digestive ferments and ruin the appetite. Saline infusion combats the loss both of water and of salt.

76. **Abortive Forms of Meningitis.**—Hochhaus remarks that the abortive forms seldom come to the notice of physicians, and yet they are of great epidemiologic importance as sources of infection of others. During the first six months of this year there were thirty-two cases of meningitis at Cologne and twenty-four of these passed under his observation. In all there were pains at the back of the neck, headache, vomiting, stiff neck and a chill; in a few cases the nose and throat secretions gave positive bacteriologic findings. There were also sore throat and bronchitis in most cases. These symptoms all rapidly retrogressed in the sixteen abortive cases and the men felt quite well. The diagnosis was based mainly on the fact that the men had been living with those who had developed severe epidemic meningitis. It is wise when the latter is prevalent to have the nasopharyngeal secretions examined from all those who present any symptoms on the part of the air passages and pains in the limbs.

Deutsche Zeitschrift für Chirurgie, Leipzig

July, CXXXIII, Nos. 5-6, pp. 425-632

82 Wounds of the Lungs. J. Volkmann.

83 Pathology of Surgical Disease of the Vessels. (Zur Pathologie chirurgisch wichtiger Gefässerkrankungen und der Aneurysmen peripherer Arterien.) H. Schum.

84 Experiences at Base Hospital in Balkan War, 1913. (Etappenspitalerfahrungen in Dimotika.) A. Alder.

85 *Nerve Blocking by Kulenkampff's Technic for the Brachial Plexus. E. Schepelmann.

86 Injury of the Crucial Ligaments. (Zur Kreuzbänderverletzung.) R. Morian.

87 Dressing and Immobilizing Wounds. H. Brun.

88 Open Treatment of Wounds. (Offene Wundbehandlung.) Schede.

85. **Blocking the Brachial Plexus.**—Schepelmann states that in his application of Kulenkampff's technic in 300 cases he observed unpleasant by-effects in seven cases, that is, in 2.3 per cent. This included four cases of interference with the breathing on account of injury of the pleura, one case of pneumothorax, and two of brain symptoms, alarming at

first but rapidly subsiding completely. He never witnessed any harm from repeating the plexus anesthesia at weekly intervals, as he had occasion to do in mobilizing some stiff joints. With improved technic and patient waiting, the anesthesia is satisfactory with extremely rare exceptions. He warns, however, that the plexus should never be blocked on both sides. The above statistics do not include nineteen cases presenting what he calls "Horner's syndrome," which he remarks is entirely harmless. They do not include either a case of paresis of the fingers from the constricting band.

Jahrbuch für Kinderheilkunde, Berlin

October, LXXXII, No. 4, pp. 261-346

89 Albumin Milk and Its Substitutes. (Eiweissmilch und ihre Ersatzpräparate.) E. Glanzmann.
90 *Transmissibility of Exfoliating Dermatitis of the Newly Born. M. K. Wolf.
91 *Bacterial Affections of the Urinary Organs in Infants. (Sog. Pyelocystitis im Säuglingsalter.) H. L. Kowitz.
92 *Invagination of the Intestines in Infants and Small Children. (Darminvaginationen im Kindesalter.) H. Wollin (Prague).

90. **Transmissibility of Exfoliating Dermatitis of the Newly Born.**—Wolf encountered within two weeks recently three cases of exfoliative dermatitis in newly born infants, fatal by the ninth to the seventeenth day. The clinical picture was the same in all, and each had been breast fed. Rittershain had 297 cases of the kind at Prague in ten years' experience. He and others regard it as an affection developing only in early infancy, noncontagious, and to be sharply distinguished from pemphigus of the new-born. Others regard pemphigus of the newly born and exfoliating dermatitis of the newly born as the same process, differing merely in its intensity. Wolf has been unable to find in the literature any history of direct transmission from skin to skin but has met with a case of this kind in practice. The mother of one of the three infants mentioned above developed an apparently identical process in the right breast at the point where the child had lain to nurse. The clinical picture was unmistakably the same, after an incubation period of ten days. The general health was not impaired, and under eight days' hospital treatment the condition improved to a practical cure and the woman has not been seen since. A peculiarity of the case was the presence of two hard tumors in the depths of the affected region. One was as large as a hen's egg, the other not so large. They retrogressed without softening, but the local painfulness prevented investigation. They suggest, however, that certain special factors are involved in the production of the exfoliating dermatitis.

91. **Bacterial Affections of the Urinary Organs in Infants.**—Kowitz has examined forty infants under 2 with some affection of this kind. There were about as many boy as girl babies in the series, and the connection with gastro-intestinal disturbances and the bacteriologic findings indicated that bacilli of the colon group, brought by the blood, were responsible for the processes in the various cases. He says that the terms cystitis or pyelitis are not applicable. A more accurate descriptive term would be bacterial nephritis or colinephritis in small children. In 37 of his 40 cases bacteria were found in pure cultures; mixed infection in only 3. Among the pure cultures, colon bacilli were found alone in 24 cases, paracolon bacilli in 10, and staphylococci alone in 3. In these latter cases the infants had furunculosis or eczema. In the 3 cases of mixed infection colon bacilli were present. In the entire 40 cases members of the colon family were found in 92.5 per cent.; this proved conclusively, he thinks, that the germs came originally from the bowel. It is astonishing, he remarks, that so little attention has been paid to the blood in studying disease of the urinary apparatus in small children, especially in "pyelitis in infants." Bahr found bacilli in the blood in 117 of 120 cases of digestive disturbances in infants, in 65 during life, and the colon bacillus predominated far above all others. The blood count in the few cases in which he could make it suggests the importance of research in this line.

In 5 cases Kowitz could trace the development of the urinary affection. First there was albumin in the urine and bacteria soon appeared also in the urine. Then after an interval of five or six days, pus and epithelial cells, and sometimes tube-casts and red blood corpuscles were also found in the urine. With ascending infection the sequence would have been reversed. The cases are grouped and tabulated under various headings, the tables filling six pages. The blood count in twelve cases showed leukocytosis from 10,000 to 20,000 in all but 4; the small lymphocytes ranged from 20 to 72.7, the large from 0.7 to 8; the polynuclears from 15 to 53.7; the eosinophils from 0 to 6, and the mononuclears from 0.3 to 11. The corresponding standard figures for infants are (Japha) 12,000; 25 to 35; 50 to 55; eosinophils 2 to 7 and mononuclears 8 to 15. Pfaundler's figures for infants are: lymphocytes, 22; polynuclears, 51; eosinophils, 4; and mononuclears, 12.

92. **Invagination of the Intestines in Children.**—Wollin analyzes twenty cases from the Prague children's clinic, saying that the outcome confirms the gravity of the prognosis the younger the child. Only three of the thirteen infants less than 1 year old survived, while the seven older than this all recovered. The younger the child, the more difficult the diagnosis, as a rule, and the longer the delay before the operation.

Medizinische Klinik, Berlin

September 26, XI, No. 39, pp. 1065-1092

93 Psoriasis and Allied Diseases. J. Jadassohn. Concluded in No. 40.
94 *Abnormal Mammary Secretion. (Zur Pathologie der Brustdrüsensekretion.) E. Ebeler.
95 Serotherapy of Typhoid B. Fellner.
96 *Relapsing Fever (Ruckfallfieber.) L. R. v. Korczynski. Commenced in No. 38.
97 Influence of the War on Domestic Animals and Game in the War Zone. (Einfluss des Krieges auf die Tierwelt.) A. Sokolowsky.
98 Prognosis in Typhoid from Bacteriologic Findings. O. Landsberger.
99 Sterilization of Clothing. (Bekämpfung der Kleiderläuse durch trockne Hitze.) A. Hartmann.

94. **Pathology of Mammary Secretion.**—Ebeler had his attention called to this subject in 1912 by the case of a woman of 50 from whose breasts there oozed a watery fluid after a laparotomy for myomatous uterus and ovarian cysts. Since then he has examined for mammary secretion in various gynecologic affections, and reports here positive findings in 87 cases. The secretion ranged from a watery fluid to actual milk in the different cases and sometimes in the same case at different times. Genital tumors seem to have a particularly stimulating action on the secreting glands in the breast. He lists 12 positive cases with uterine myoma, 5 with ovarian cysts, 6 with pyosalpinx, 10 with cancer of the uterus, and 11 with retroflexion, 9 with prolapse of genital organs or bladder, 12 with inflammatory processes in the uterus, and 22 with other affections, such as hernia, mammary cancer, tuberculous peritonitis, etc. These different series included women who had never been pregnant, but all were over 20, except one girl of 16 with appendicitis, one of 17 with probable renal tuberculosis, and one of 19 with movable retroflexion of the uterus. In 24.13 per cent. of his 87 cases the women had never been pregnant; a number were virgins and 11 were past the menopause. One was a woman of 82 with prolapse of the vagina. The proportion of cases of colostrum secretion outside of a pregnancy is largest with genital tumors. Klein reported this year the case of a woman of 51, in the menopause for a year, with profuse secretion of milk in both breasts accompanying a sarcoma of the uterus. When the breasts are examined more systematically in the nonpregnant, such cases will be found more common than is recognized at present. A mammary secretion of colostrum therefore cannot be regarded as of so much import in the diagnosis of pregnancy as has hitherto been accepted.

96. **Relapsing Fever.**—Korczynski has had considerable experience with relapsing fever recently in the eastern seat of war, and states that there was but one attack in 76 per cent. of seventy-five cases, while the other patients had one relapse. He says that salvarsan must be regarded as the sovereign remedy, but it must be given in large doses, 0.9 gm. for adults and from 0.45 to 0.6 gm. for youths. Heart tonics generally are needed. If such large doses of salvarsan seem contraindicated, smaller, repeated doses might be tried.

Monatsschrift für Kinderheilkunde, Berlin

XIII, No. 9, pp. 393-430

100 Local Diphtheria Bacillus-Broth-Culture Reaction in Man. G. Bessau and J. Schwenke.

101 Experimental Research on the Causes of Softening and Destruction of the Cornea: Keratomalacia. E. Freise, M. Goldschmidt and A. Frank.

Münchener medizinische Wochenschrift, Munich

September 28, LXII, No. 39, pp. 1309-1344

102 Degenerated Forms of Gonococci. P. Asch and Adler.

103 *The Blood Count and Agglutination after Inoculation against Typhoid. (*Beobachtungen bei Typhusschutzgeimpften.*) P. Ziersch.

104 Treatment of Typhoid with Vaccines. (Zur Frage der sogen. Vakzine oder Bakteriotherapie: Ergotrope Therapie des Typhus abdominalis.) F. v. Gröer.

105 *Detection of Syphilis in the Public. (Bedeutung der Vorgeschichte, des Befundes und der Wassermannschen Reaktion für die Erkennung der syphilitischen Ansteckung in den breiteren Volksschichten.) G. Hubert.

106 *Relations of Life to Light. (Beziehungen des Lebens zum Licht.) F. Schanz.

107 *Serodiagnosis in Psychiatry. (Zur Frage der Bedeutung des Dialysierverfahrens nach Abderhalden für die Psychiatrie.) V. Kafka.

108 Wounds of Joints. (Gelenkverletzungen, Gelenkeiterungen und ihre Behandlung.) E. Payr. Commenced in No. 37.

109 Abdominal Wounds. (Bauchschussverletzungen.) P. Kraske.

110 Pneumococci and Staphylococci Not Conveyed by Lice. (Zur Frage der Uebertragung von Bakterien durch Läuse.) E. Widmann.

111 *Dangers from Oxygen in Treatment of Gas Phlegmons. (Vorsicht bei der Sauerstoffbehandlung der Gasphlegmonen!) E. Borchers.

112 *Reliability of Preventive Serotherapy of Tetanus. (Zur Frage der prophylaktischen Impfung gegen Tetanus.) W. Wolf.

113 Abdominal Wounds. (Zur Pathologie und operativen Behandlung der Bauchschussverletzungen.) A. Läwen.

114 Abdominal Wounds. M. Matyas.

103. **Blood Findings After Inoculation Against Typhoid.**—Ziersch examined daily the blood of forty-five soldiers who had been inoculated three times. No regularity in the response to the agglutination test could be detected during the following months. A positive response was obtained in eighteen, and a negative in twenty-seven. The leukocyte count ranged about 4,900 to 5,700. The differential blood count kept like that of typhoid except that the eosinophils did not disappear as with typhoid.

105. **Differential Diagnosis of Syphilis.**—Hubert relates that during the last three years every patient at the first medical clinic at Munich has been examined for possible syphilis. The previous history in each case, the physical findings, and the response to the Wassermann test were correlated, the results demonstrating that 8.8 per cent. of the 8,652 patients applying to the clinic were infected, although fully 52 per cent. of the 405 men and 75 per cent. of the 354 women infected were unaware of it. This lack of any previous history or suspicion of syphilis may prove misleading in treatment of cardiovascular affections, apoplexy or headache. Hubert was also impressed with the prevalence of latent syphilis, and the importance of serodiagnosis for revealing unsuspected syphilis in such a large proportion of the general public. He found also that quite a large proportion of the patients denied syphilis, in deliberate falsehood. In the cases of tabes, the Wassermann reaction alone cleared up the diagnosis in 56 per cent. of the men and in 65 per cent. of the women. The anamnesis supplemented the Wassermann only in 75 per cent. in the male tabetics and in 68 per cent. of the women. The experiences related confirm the value of the routine Wassermann test in general hospital practice.

106. **Relation of Life to Light.**—Schanz cites recent authorities to sustain the results of his own research which has demonstrated that insects and the dwellers in the sea are all color blind. They see everything gray in gray. As Hess has established, only vertebrates living in air are able to distinguish colors. This demolishes the old conception that the colors of the flowers serve to attract and guide insects. The brilliant coloring of the sea dwellers is obscured to the eye of man at a depth of a few feet, and the light penetrating the water changes its color as it descends lower and lower; the red and yellow rays being absorbed more than the blue or green. The sea dwellers look red and yellow to us because their integument is so constituted that they are able to absorb the rays which are able to penetrate to them, and thus they can utilize the light which reaches them. The coloring matters in their integument thus serve as photocatalyzers, the same as the hematoporphyrin in the back of the earthworm. He explains further that light modifies albumin, changing it from a readily soluble into a much less soluble form. There are many substances which retard or hasten this change. The most common substance of the kind is chlorophyl, with whose photocatalyzing properties we are all familiar. In certain animals the entire integument is sensitive to the action of light, thus forming an apparatus for the perception of light as it is provided with some photocatalyzing element. This seems to be the case with the sea dwellers: In others, like the earthworm, this element is restricted to some part of the creature. In the higher animals this localization is still more specialized, and the eye develops. There is much to sustain the assumption, he adds, that the act of seeing in the higher animals is at bottom the same photocatalytic process which we observe going on everywhere throughout all living beings.

107. **Serodiagnosis and Psychiatry.**—Kafka concludes his discussion of this subject with the remark that the ninhydrin reaction must be studied further, tranquilly and objectively, as the results already obtained show promise of great usefulness. To date, however, the method has no actually practical value in psychiatry. He urges simultaneous study of other methods working toward the same aims, to control and supplement the findings with the dialysis method, mentioning P. Hirsch's "interferometry" in particular for this purpose. Even with all these restrictions, however, the Abderhalden technic may already yield important information to fill gaps in our knowledge of the case, especially in differentiating between dementia praecox and uncomplicated cases of manic depressive insanity or psychoneuroses; also between epilepsy and hysteria, between paralysis and cerebral syphilis, between organic affections of the central nervous system and neuroses. The cases of glandular imbecility and idiocy will be recognized better. Chief in interest, however, is the light thrown on the pathogenesis of nervous and mental affections.

111. **Dangers of Oxygen in Treatment of Gas Phlegmons, Etc.**—Borchers injected a 3 per cent. hydrogen dioxid solution subcutaneously and intramuscularly in a case of extensive gas phlegmon after exarticulation of the shoulder. The prompt recovery he ascribed to the nascent oxygen, and was confirmed in this view by the prompt recovery in two other similar cases. In the fourth case, however, breathing stopped at once on injection of the dioxid solution into the stump of the arm after amputation. This makes the fifth case on record of sudden death from this cause, and it warns of the dangers of injecting oxygen into the tissues. He presents evidence further that the prognosis of gas phlegmons is not so grave as has been hitherto assumed. Under simple multiple small incisions the infected lymph stream is diverted outward, and the infection is conquered. Of course these remarks as to the danger of oxygen do not apply to rinsing the wound with nascent oxygen. This is the best mechanical cleansing method at our disposal to date, and does no harm where the oxygen can escape freely.

112. **Preventive Injection of Antitetanus Serum.**—Wolf relates that after the German authorities decreed that every wounded soldier is to be given a preventive injection of antitetanus serum, the number of cases of tetanus dropped off to almost zero. In one case tetanus developed thirty hours after the injury, notwithstanding the preventive injection. Although the incubation was so brief the tetanus ran a very mild course. There is every reason to assume that without the preventive injection this case would have terminated fatally. The experiences related indicate that the preventive injections are an almost certain protection against lockjaw; also that the injection need not be made at once; even delay till the next day does not detract from its efficacy. It is not necessary, he adds, to give the preventive injection to every wounded man; it is enough to give it after shrapnel

d grenade wounds. When there are a number of scattered ounds, soiled with horse manure, the foci of infection being merous the patient requires a double dose of the antitanus serum.

Wiener klinische Wochenschrift, Vienna

XXVIII, No. 25, pp. 665-696

15 General Principles for Treatment of the Wounded. (Wundbehandlung in den Kriegsspitälern.) L. R. von Ruediger.
16 Ergot and Tetany. (Weiteres Material zur Sekaleatiologie der Tetanie.) A. Fuchs and R. Wasicky.
17 Vaccination against Bacillary Dysentery. (Zur Schutzimpfung gegen Bazillenruhr.) F. Lucksch.
18 Exposure to Direct Sunlight as Favorable Therapeutic Measure in Typhus. (Verhalten des Flecktyphus bei direkter Sonnenbestrahlung.) H. Wertheimer.
19 Typhus a Form of Typhoid. S. Rossberger.
20 Suggestions for Prophylactic Measures against Venereal Disease as Men are Dismissed from Military Service. O. Sachs and B. Lipschütz.

No. 26, pp. 697-724

121 Experimental Studies on Variola. J. Kyrle and G. Morawetz.
122 Infected Wounds of Bones and Joints. W. Denk.
123 Favorable Effect of Normal Horse Serum in Treatment of Typhus. R. Roubitschek.
124 Stock Vaccine Treatment of Typhoid. (Heterovakzinebehandlung des Typhus abdominalis.) F. Lucksch.
125 The Louse Question. E. v. K. Lenz.
126 The War and Social Insurance in Hungary. (Der Krieg und die ungarische Arbeiterversicherung.) H. Pach.
127 Heat-Stroke and Sun-Stroke. (Hitzschlag und Sonnenstich.) E. Wiener.
128 Suggestion to Add Stain to Vaccine, Blue for Typhoid, Red for Cholera. (Markierung der Typhus- und Cholera-Schutzimpfungen.) H. Hültl.
129 Wounds of the Brain. (Zur Chirurgie der Schussverletzungen des Gehirns.) Frey and H. Selye.

Zeitschrift für Kinderheilkunde, Berlin

July 26, XIII, Nos. 1-2, pp. 1-128

130 *Tuberculin Treatment of Children. H. Koch.
131 *The Initial Fever of Tuberculosis. H. Koch.
132 Anomalies in the Blood of the Prematurely Born and Weakly Children. (Zur Kenntnis der Blutveränderungen bei Frühgeburten und debilen Kindern.) D. Kunckel.
133 Interlobar Pleurisy in Children and the Roentgen Findings. F. Weihe.

130. **Tuberculin Treatment of Children.**—Koch is assistant at the children's clinic at Vienna in charge of von Pirquet, and he here gives a detailed description of forty-five children given systematic courses of tuberculin treatment. He reports excellent and encouraging results, but emphasizes the changes he has introduced into the method of tuberculin treatment for children. He gives the tuberculin in a larger amount of fluid than others use, up to 10 or 20 c.c., believing that the tuberculin diffuses better in this way. He also changes the site of the injections, and increases the doses by geometrical progression. Only two strengths are required, 1:100,000 and 1:10,000. He begins with 1/1,000 mg. and increases to the final dose at 1,000 mg. This is reached usually in seven, thirteen or twenty-five doses, giving two injections a week. He adds that the terminal dose can be repeated as long as it seems necessary to continue the course. In seven cases the treatment had to be discontinued as periods of high fever set in. All the other little patients bore the treatment well and improved under it. The children were of all ages, but most were between 3 and 9. The most unfavorable age for the treatment is the first three years, and the eleventh, thirteenth and fourteenth years. The duration of treatment averaged only eleven weeks.

131. **Initial Fever of Tuberculosis.**—Koch relates that he had three children under observation who developed tuberculosis under his eyes, the exact date of their exposure to contagion being known. The children were tested regularly for the skin tuberculin reaction afterward. The response became positive at the same time that fever developed and kept up, and this was in each case during the seventh week after infection. The initial fever was the only clinical sign that anything was wrong, but from the first it displayed the characteristics of the fever of tuberculosis.

Zeitschrift für Urologie, Leipzig

IX, No. 7, pp. 241-280

134 The Urine in Diagnosis. (Zur Entwicklung der klinischen Harndiagnostik in chemischer und mikroskopischer Beziehung.) E. Ebstein. Concluded in No. 8.
135 Urology and the War. II. H. Lohnstein.
136 Fistulas, Abscesses, Pyuria and Bacilluria as Complications Following Nephrectomy for Tuberculosis. T. Verriotis.

Gazzetta degli Ospedali e delle Cliniche, Milan

September 29, XXXVI, No. 66, pp. 1025-1040

137 *Cholera Traced to the Market Place. (Se e come un mercato possa essere o divenire centro o veicolo d'infezione colerica.) M. Ciosefi.
138 *Case of Simple Traumatic Polyuria. A. Cardarelli.

137. **Epidemic of Cholera.**—Ciosefi relates that at Trieste nineteen cases of cholera developed at scattered points throughout the city, all in the course of ten days, and with no apparent connection between the cases. There were thus several remote foci. The water, milk, and similar sources of infection could be excluded, the only tenable explanation being that some carrier had been in the central fruit and vegetable market, and had infected some of the fruits and vegetables by handling them. The populace has been educated by the authorities to cook fruits and vegetables and eat none raw, so that infection could not have occurred from uncooked fruits or vegetables. The dealers, however, handling the goods, thus became infected secondarily, and carried the infection home. Some person connected with the market or working nearby was discovered in the environment in all the cholera cases.

138. **Traumatic Polyuria.**—In the case reported by Cardarelli a boy of 15 fell from a height of nearly 50 feet and suffered several fractures, and concussion of the brain. For twenty days he was unconscious or delirious, and not until after the fortieth day was the brain working apparently normally once more. He had much headache and thirst and voided from 17 to 18 liters of urine in the twenty-four hours. The traumatism seems ample to explain the polyuria, and under treatment with hypophysis extract the youth seems to be improving. The urine voided does not total over 8 or 9 liters now. Cardarelli thinks that it is not necessary to incriminate hysteria in this case although hysteria is often responsible for transient polyuria. He saw a case not long ago in which a young woman with pronounced stigmata of hysteria voided 22 liters of urine. In another case a boy of 11, after a severe fright, passed no urine for four weeks although apparently entirely healthy, and the anuria then stopped as suddenly as it had begun.

Policlinico, Rome

October 3, XXII, No. 40, pp. 1333-1364

139 Precipitation by Heat a Diagnostic Reaction in Bacillary Dysentery. A. Missiroli.
140 *Reciprocal Action on Each Other of Microbian Toxins. Mahokian.

October, Medical Section, No. 10, pp. 433-480

141 *Acute Raynaud's Disease Accompanying Paralysis. R. Alessandri and G. Mingazzini.
142 *Multiple Myelomas with Bence-Jones Albumosuria. (La malattia di Kahler-Bozzolo con illustrazione di un nuovo caso.) A. Martiri. To be continued.

140. **Interaction of Microbian Toxins.**—Mahokian reports experiences showing that tetanus and diphtheria toxins influence each other, the former attenuating the action of the latter when injected into guinea-pigs. On the other hand, diphtheria toxin enhances the toxic action of tetanus toxin. When tetanus toxin was injected along with diphtheria antitoxin, the curative influence of the latter was enhanced, but the exact opposite was observed with antitetanus serum. Microbes seemed to acquire greater virulence when some of their own toxin, and sometimes an alien toxin, was added to the culture medium. Experiments with the toxin from leprosy bacilli and from tubercle bacilli gave results suggesting that the secretions of the former were less diffusible than of the latter, which might be one reason why the former is harder to cultivate.

141. **Acute Raynaud's Disease Associated with Paralysis.**—Alessandri and Mingazzini encountered a number of cases of this kind among persons injured in the last great earthquake in Italy. Six of the patients died; in three the disturbances progressed to gangrene compelling amputation. The other patients recovered more or less completely

although the paralysis persisted in most. Trophic vasomotor disturbances were evidently the main factor in some cases and acute inflammation of peripheral nerves in others. The latter group is much less serious. All the patients had been buried under the ruins for from one to three days, exposed to cold, wet and fright.

142. **Multiple Myelomas.**—Martiri reviews the literature on the syndrome described by Kahler and first diagnosed in the living subject by Bozzolo. He has compiled 204 cases and adds another to the list. His patient was a man of 55, a great smoker and drinker, who developed occipital headache in 1913, subcontinuous, a little worse at night, with occasional dizziness, all improving under treatment for neuralgia. A few months later pains and tenderness in the right ribs became so intense that the man could not get up for a few days, but they gradually improved although the pains could be elicited anew by bending the trunk. Later, pains in the knee prevented walking. A tumor could be felt on the sternum, painful on pressure, but there was never any fever. The urine contained from 0.15 to 1 per thousand Bence-Jones bodies, and the diagnosis of Kahler-Bozzolo's disease was confirmed by the practically spontaneous rupture of the femur. The course was progressive, the man dying in coma about a year after the first symptoms. The variability of the seat of the pains from day to day is a striking feature of this disease, but the pains always cling to the bones, and nocturnal exacerbations are common. In some cases the complaints seemed to be so out of proportion to the slight objective findings that simulation was suspected. The discussion of the disease, of the Bence-Jones albumose and its determination, etc., fill thirty pages in this installment of Martiri's article.

Riforma Medica, Naples

October 2, XXXI, No. 40, pp. 1093-1120

143 *Pathologic Obesity in Two Infants. (L'obesita mostruosa nei bambini lattanti.) L. Ferrannini. Commenced in No. 39.
144 Catalase in Organs with an Internal Secretion. F. Galdi.

143. **Extreme Obesity in Infants.**—In this concluding half of his article Ferrannini summarizes his conclusions in the statement that disturbances in the glands with an internal secretion are undoubtedly responsible for pathologic obesity in infants, as at any age. The influence of the nervous system and of infections and intoxications is felt through structural or functional changes or both in the glands with an internal secretion. In the two cases of which an illustrated description is given, probably more than one of these glands was involved as the syndrome was extremely pronounced and complex. The pancreas and the thyroid can probably be excluded as also the genital glands, on account of the age of the little patients. The pituitary body, the pineal gland and the suprarenals are probably the ones involved, the last two only secondarily.

Russkiy Vrach, Petrograd

XIV, No. 34, pp. 793-816

145 Treatment of Poisoning with Asphyxiating Gases. V. I. Skvorzoff.
146 War Psychoses. S. A. Soukhanoff.
147 *Cultivation of Cholera Germs from the Feces. N. I. Krich.
148 *Heterogenous Hemolytic Serums. I. L. Krichevsky.

No. 35, pp. 817-840

149 Operative Treatment of Habitual Luxation of the Humerus. L. G. Stukkey.
150 *Wounds Caused by Earth. S. L. Timoffieff.
151 Draining of Wounds. V. N. Novikoff.
152 Splint with Extension in Fractures of Humerus. A. T. Berdiaeff.
153 *Acute Necrosis of Pancreas. V. P. Nedokhleboff.

147. **Cultivation of Cholera Vibriones.**—Krich found Ottolenghi's medium for cultivation of cholera vibriones more suitable than pepton-water. Fresh ox gall is filtered through paper and then 3 c.c. of the filtrate is mixed with 100 c.c. of 1:1,000 solution of soda crystals and 1:1,000 of potassium nitrate. The mixture is placed in test tubes and sterilized at 115 C. for fifteen or twenty minutes. Krich had the opportunity of studying this method on cholera patients simultaneously with the pepton-water medium. The parallel experiments showed the advantages of the gall medium. The latter would produce a luxuriant growth of cholera vibriones [illegible] when the pepton-water medium would show no growth whatever. The technic was as follows: 1 c.c. of feces was place in a glass with 30 c.c. of alkaline gall prepared according t Ottolenghi. Six or twelve hours later a reinoculation wa made on slanting agar, rendered solid by addition of 1.5 pe cent. of agar to 10 c.c. of gall. The specimens were staine with acid fuchsin, after fixation in an alcoholic solution mercuric chlorid, or a 1:1,000 solution.

148. **Hemolytic Serums.**—Krichevsky showed that the connective tissue of animals, as for instance, the fat of a guinea pig, contains an antigen which produces a hemolysin against sheep red blood corpuscles. The cause being in the nuclei, he concluded that nucleated erythrocytes, which are found in a hen, for instance, should also possess this ability of producing hemolysins against sheep erythrocytes. As the organs of a hen contain such an antigen, he chose the erythrocytes of this animal for his experiments. They were injected into rabbits and the latter's serum proved afterward hemolyti for sheep red cells. Therefore he comes to the conclusio that the hen's erythrocytes contain the same heterogenou antigen—which produces hemolysis of sheep cells—as th organs. The obtained heterogenous serum possesses hig hemolytic properties; 1,000 hemolytic units in 1 c.c. for shee cells, but it is inactive against the cells of the hen that gav the antigen. Therefore, Krichevsky thinks that specificity antibodies does not exist, because rabbits injected with hen' red cells produce a hemolysin not against the latter, bu against sheep cells. However, the serum of a hen contain agglutinogens as shown by the fact that immunization rabbits generates in their serum a large amount of agglutinins against the erythrocytes of hens. Thus, the erythrocytes of the latter contain not only heterogenous hemolysin but also heterogenous agglutinins. The experiments als showed that rabbit's serum immunized by hen cells does no contain hemolysins against beef erythrocytes either, and tha the connective tissue of animals (guinea-pig, for instance contains a heterogenous sheep antigen—rabbits injected wi fat from a guinea-pig give a serum that dissolves the shee erythrocytes.

150. **Wounds Caused by Earth.**—Wounds caused by eart are the by-effects of the action of projectiles. Explodin bullets and shells drive small particles of dirt into the ski The neck, face and other exposed portions of the body a usually affected. The mildest form is "tattooed skin" whic appears as if covered with dirt which cannot be remove either with soap or benzin, as the smallest particles of th dirt have been driven into the skin. It becomes swolle parchment-like, and either peels or small necrotic foci for Venous thrombi sometimes develop. With the second for abrasions with cyanosis and swelling, deep necrosis ma occur or thrombophlebitis. The third variety is the formatio of real wounds with irregular edges and subcutaneous hemorrhages; the wound is full of pieces of earth, stones or dir In one case one and a half pounds of dirt were found in th wound. Such wounds may be the cause of general sepsi Earth wounds may be complicated with brain concussion fractures of bones and contusions of viscera. In milder case there may be dizziness, headache, general pallor or redne of the face, neck and chest. In other cases the explosio caused psychic disturbances. In all he had forty-five cas of "dirt wounds" among 2,000 patients (2.25 per cent.). T wounds are superficial, but badly infected. The treatm therefore, consists in prevention of sepsis. By the sixth or ninth day as a rule the soldiers wounded in this way could be sent back to the interior without danger.

153. **Acute Necrosis of Pancreas.**—Nedokhleboff advocates early operative treatment of acute necrosis of the pancreas. It can be diagnosed by the following symptoms: adipositas, sudden onset with a severe shock, stormy course, localization of pain in the epigastrium, meteorism in the region of the stomach, absence of muscular defence, prolonged vomiting of bile, the contrast between the collapsed state and the good pulse, cyanosis and dyspnea without corresponding changes in the heart and lungs. All these symptoms were present in a case reported in detail. This patient was a 19 year old [illegible] after a successful operation.